

# PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctest.com



# **MEASUREMENT REPORT** FCC Part 22 & 90

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

**Date of Testing:** 07/22 - 08/16/2019 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M1907300131-04.A3L

FCC ID: A3LSMT867U

APPLICANT: Samsung Electronics Co., Ltd.

**Application Type:** Certification Model: SM-T867U Additional Model(s): SM-T867R4 **EUT Type:** Portable Tablet

**FCC Classification:** PCS Licensed Transmitter (PCB)

**FCC Rule Part:** §2.1049, §22(H), §90(S)

**Test Procedure(s):** ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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)

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.







FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 1 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	raye i ui 38



# TABLE OF CONTENTS

1.0	INTF	RODUCTION	4
	1.1	Scope	4
	1.2	PCTEST Test Location	4
	1.3	Test Facility / Accreditations	4
2.0	PRC	DUCT INFORMATION	5
	2.1	Equipment Description	5
	2.2	Device Capabilities	5
	2.3	Test Configuration	5
	2.4	EMI Suppression Device(s)/Modifications	5
3.0	DES	CRIPTION OF TESTS	6
	3.1	Evaluation Procedure	6
	3.2	Radiated Power and Radiated Spurious Emissions	6
4.0	MEA	SUREMENT UNCERTAINTY	7
5.0	TES	T EQUIPMENT CALIBRATION DATA	8
6.0	SAM	IPLE CALCULATIONS	g
7.0	TES	T RESULTS	10
	7.1	Summary	10
	7.2	Occupied Bandwidth	11
	7.3	Spurious and Harmonic Emissions at Antenna Terminal	20
	7.4	Band Edge Emissions at Antenna Terminal	23
	7.5	Conducted Power Output Data	28
	7.6	Radiated Power (ERP)	29
	7.7	Radiated Spurious Emissions Measurements	31
	7.8	Frequency Stability / Temperature Variation	35
8.0	CON	ICLUSION	38

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dog 2 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 2 of 38





# **MEASUREMENT REPORT**



FCC Part 22(H) & 90

Mode	Tx Frequency (MHz)	Measurement	Max. Power (W)	Max. Power (dBm)	Emission Designator	Modulation
LTE Band 26	814.7 - 823.3	Conducted	0.262	24.18	1M08G7D	QPSK
LTE Band 26	814.7 - 823.3	Conducted	0.217	23.37	1M08W7D	16-QAM
LTE Band 26	814.7 - 823.3	Conducted	0.173	22.37	1M08W7D	64-QAM
LTE Band 26	815.5 - 822.5	Conducted	0.263	24.20	2M68G7D	QPSK
LTE Band 26	815.5 - 822.5	Conducted	0.221	23.44	2M68W7D	16-QAM
LTE Band 26	815.5 - 822.5	Conducted	0.171	22.32	2M69W7D	64-QAM
LTE Band 26	816.5 - 821.5	Conducted	0.265	24.23	4M49G7D	QPSK
LTE Band 26	816.5 - 821.5	Conducted	0.222	23.46	4M49W7D	16-QAM
LTE Band 26	816.5 - 821.5	Conducted	0.166	22.19	4M49W7D	64-QAM
LTE Band 26	819	Conducted	0.274	24.38	8M98G7D	QPSK
LTE Band 26	819	Conducted	0.229	23.60	8M95W7D	16-QAM
LTE Band 26	819	Conducted	0.164	22.15	8M98W7D	64-QAM
LTE Band 26	821.5	Conducted	0.281	24.48	13M4G7D	QPSK
LTE Band 26	821.5	Conducted	0.235	23.71	13M4W7D	16-QAM
LTE Band 26	821.5	Conducted	0.167	22.24	13M4W7D	64-QAM
LTE Band 26	821.5	ERP	0.136	21.34	13M4G7D	QPSK
LTE Band 26	821.5	ERP	0.106	20.27	13M4W7D	16-QAM
LTE Band 26	821.5	ERP	0.081	19.11	13M4W7D	64-QAM

**EUT Overview** 

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 2 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 3 of 38



#### 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 Engineering Laboratory, Inc. 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 v01.

#### 1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab 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 (2451B) test laboratory with the site description on file with ISED.

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 4 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 4 of 38



#### PRODUCT INFORMATION 2.0

#### 2.1 **Equipment Description**

The Equipment Under Test (EUT) is the Samsung Portable Tablet FCC ID: A3LSMT867U. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 22(H) and 90(S).

Test Device Serial No.: 04724, 04740, 04757, 04674, 11388, 09911

#### 2.2 **Device Capabilities**

This device contains the following capabilities:

850/1700/1900 WCDMA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), ANT+, Wirelss Power Transfer

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 and antenna port conducted emissions tests.

#### 2.4 **EMI Suppression Device(s)/Modifications**

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

FCC ID: A3LSMT867U	PCTEST LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 5 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	rage 5 01 58



## 3.0 DESCRIPTION OF TESTS

#### 3.1 Evaluation 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 §2.1053, §90.635, §90(S)

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 wooden turntable 80cm above the ground plane and 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. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168 D01 v03r01.

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:

$$P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi]$$

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  $P_{g [dBm]}$  – cable loss [dB].

The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10 log<sub>10</sub>(Power [Watts]) specified in 90(S).

For fundamental radiated power measurements, the guidance of KDB 971168 D01 v03r01 is used to record the EUT power level that is subsequently matched via the aforementioned substitution method given in ANSI/TIA-603-E-2016.

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: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Done C of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 6 of 38



#### **MEASUREMENT UNCERTAINTY** 4.0

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 (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 7 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 7 of 38



# 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
-	LTx1	Licensed Transmitter Cable Set	6/4/2019	Annual	6/4/2020	LTx1
-	LTx2	Licensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx2
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	9/17/2018	Annual	9/17/2019	441119
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
Espec	ESX-2CA	Environmental Chamber	8/18/2018	Annual	8/18/2019	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/14/2019	Biennial	2/14/2021	125518
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	5	QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		102060
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	9/19/2018	Annual	9/19/2019	100040
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	8/18/2018	Annual	8/18/2019	102134
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	4/30/2018	Biennial	4/30/2020	9105-2404
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	4/30/2018	Biennial	4/30/2020	9105-2403
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	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: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 8 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	rage o ul so



#### SAMPLE CALCULATIONS 6.0

# **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 2<sup>nd</sup> 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: A3LSMT867U	PCTEST LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 9 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet		rage 9 01 38



#### **TEST RESULTS** 7.0

#### 7.1 Summary

Company Name: Samsung Electronics Co., Ltd.

FCC ID: A3LSMT867U

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): **LTE** 

Band: Band 26

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A		PASS	Section 7.2
2.1051 90(S) 90(R)	Conducted Band Edge / Spurious Emissions	> 43 + 10 log <sub>10</sub> (P[Watts]) for all out-of-band emissions except > 50 + 10 log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of- band emissions within 37.5kHz of Block Edge (Band 26)	CONDUCTED	PASS	Sections 7.3, 7.4
2.1055 90.213	Frequency Stability	< 2.5 ppm		PASS	Section 7.8
2.1046 90.635	Conducted Power	< 100 Watts		PASS	Section 7.5
22.913(a.2)	Effective Radiated Power (Band 26)	< 7 Watts max. ERP		PASS	Section 7.6
2.1053 90(S) 90(R)	Radiated Spurious Emissions	> 43 + 10 log <sub>10</sub> (P[Watts]) for all out-of-band emissions except > 50 + 10 log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of- band emissions within 37.5kHz of Block Edge	RADIATED	PASS	Section 7.7

Table 7-1. Summary of 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.
- The analyzer plots shown in Section 7.0 were taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "2G/3G Automation," Version 4.2.

FCC ID: A3LSMT867U	ESCRETATION LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 10 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet		rage 10 01 36



#### Occupied Bandwidth 7.2 §2.1049

## **Test Overview**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

### **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 4.2

## **Test Settings**

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW  $\geq$  3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
  - 1-5% of the 99% occupied bandwidth observed in Step 7

## **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**

None.

FCC ID: A3LSMT867U	ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 11 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet		rage 11 01 38





Plot 7-1. Occupied Bandwidth Plot (LTE Band 26, 1.4MHz QPSK - RB Size 6- Low Channel)



Plot 7-2. Occupied Bandwidth Plot (LTE Band 26, 1.4MHz 16-QAM - RB Size 6- Low Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 12 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 12 of 38





Plot 7-3. Occupied Bandwidth Plot (LTE Band 26, 1.4MHz 64-QAM - RB Size 6- Low Channel)



Plot 7-4. Occupied Bandwidth Plot (LTE Band 26, 3MHz QPSK - RB Size 15- Low Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogg 42 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 13 of 38





Plot 7-5. Occupied Bandwidth Plot (LTE Band 26, 3MHz 16-QAM – RB Size 15– Low Channel)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 26, 3MHz 64-QAM – RB Size 15– Low Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 14 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 14 of 38





Plot 7-7. Occupied Bandwidth Plot (LTE Band 26, 5MHz QPSK - RB Size 25- Low Channel)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 26, 5MHz 16-QAM – RB Size 25– Low Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 15 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 15 of 38





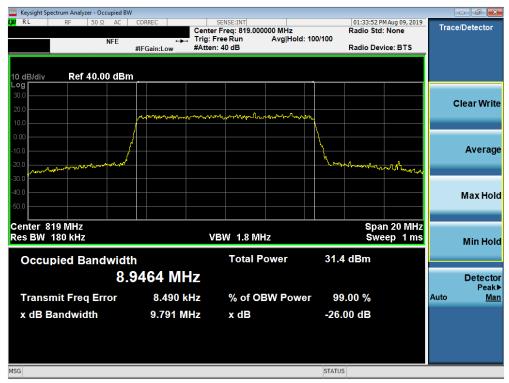
Plot 7-9. Occupied Bandwidth Plot (LTE Band 26, 5MHz 64-QAM – RB Size 25– Low Channel)



Plot 7-10. Occupied Bandwidth Plot (LTE Band 26, 10MHz QPSK - RB Size 50)

FCC ID: A3LSMT867U	PCTEST LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 16 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 16 01 38





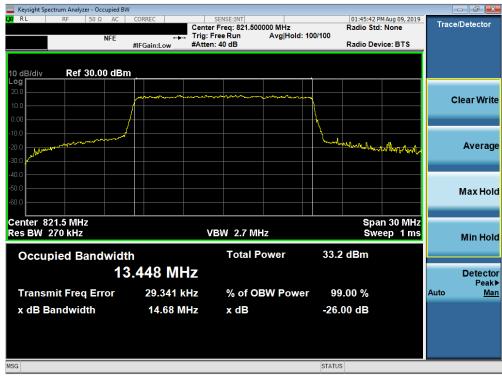
Plot 7-11. Occupied Bandwidth Plot (LTE Band 26, 10MHz 16-QAM - RB Size 50)



Plot 7-12. Occupied Bandwidth Plot (LTE Band 26, 10MHz 64-QAM – RB Size 50)

FCC ID: A3LSMT867U	PCTEST LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 17 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 17 of 38





Plot 7-13. Occupied Bandwidth Plot (LTE Band 26, 15MHz QPSK - RB Size 75)



Plot 7-14. Occupied Bandwidth Plot (LTE Band 26, 15MHz 16-QAM – RB Size 75)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogg 40 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 18 of 38





Plot 7-15. Occupied Bandwidth Plot (LTE Band 26, 15MHz 64-QAM – RB Size 75)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 10 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 19 of 38



#### Spurious and Harmonic Emissions at Antenna Terminal 7.3 §2.1051 §90(S) **Test Overview**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is 43 + 10 log<sub>10</sub>(P<sub>[Watts]</sub>), where P is the transmitter power in Watts.

## **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

#### **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots per channel)
- 2. RBW ≥ 100kHz
- 3. VBW  $\geq$  3 x RBW
- Detector = RMS
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

## **Test Setup**

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



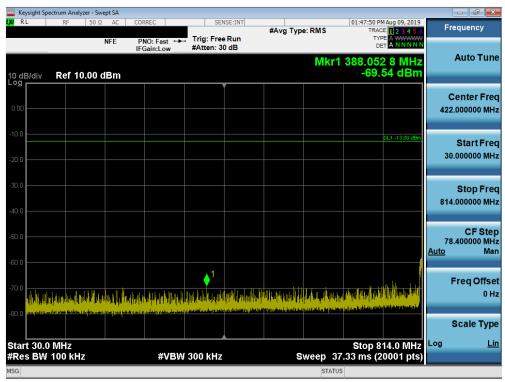
Figure 7-2. Test Instrument & Measurement Setup

## **Test Notes**

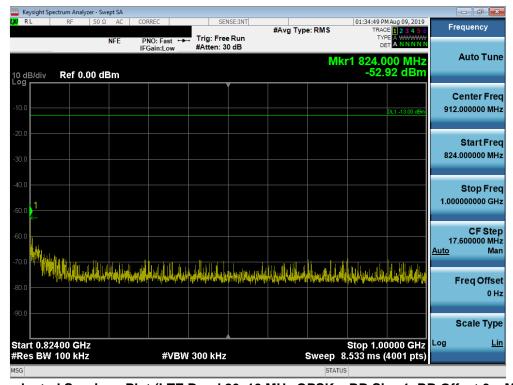
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 20 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Fage 20 01 36





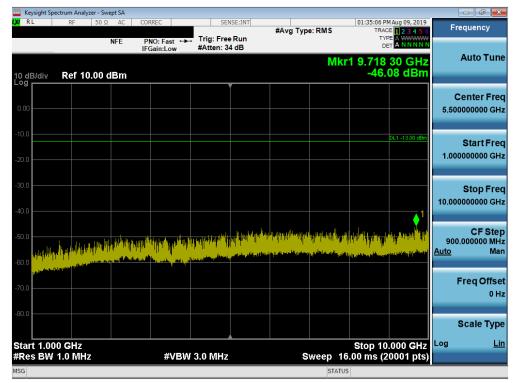
Plot 7-16. Conducted Spurious Plot (LTE Band 26, 10 MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-17. Conducted Spurious Plot (LTE Band 26, 10 MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 24 of 20	
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 21 of 38	





Plot 7-18. Conducted Spurious Plot (LTE Band 26, 10 MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 22 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 22 of 38



# 7.4 Band Edge Emissions at Antenna Terminal §2.1051 §90(S)

#### **Test Overview**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

For LTE B26 operation under Part 90.691, the minimum permissible attenuation level of any spurious emission removed from the EA licensee's frequency block by greater than 37.5 kHz is 43 +  $10\log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts. The minimum permissible attenuation level of any spurious emission removed from the EA licensee's frequency block by up to and including 37.5 kHz is 50 +  $10\log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts.

#### **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

## **Test Settings**

- 1. Span was set large enough so as to capture all out of band emissions near the band edge
- 2. RBW = 100 kHz
- 3. VBW = 300 kHz
- Detector = RMS
- 5. Trace mode = trace average
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

### **Test Setup**

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



Figure 7-3. Test Instrument & Measurement Setup

## **Test Notes**

For channel edge emission, the signal analyzer's "ACP" measurement capability is used.

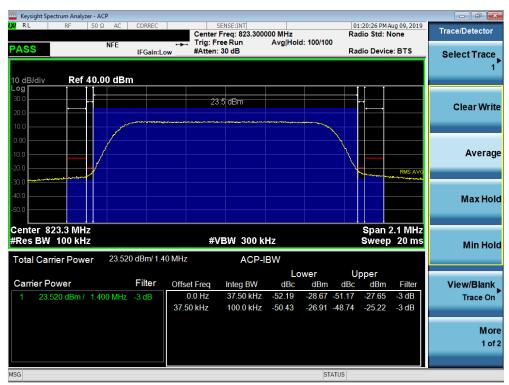
Per 22.917(b) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 23 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Fage 23 01 38





Plot 7-19. Channel Edge Plot (LTE Band 26, 1.4MHz QPSK – RB Size 6– Low Channel)

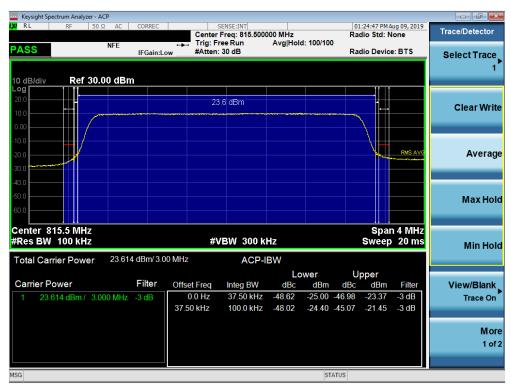


Plot 7-20. Channel Edge Plot (LTE Band 26, 1.4MHz QPSK - RB Size 6 - High Channel)

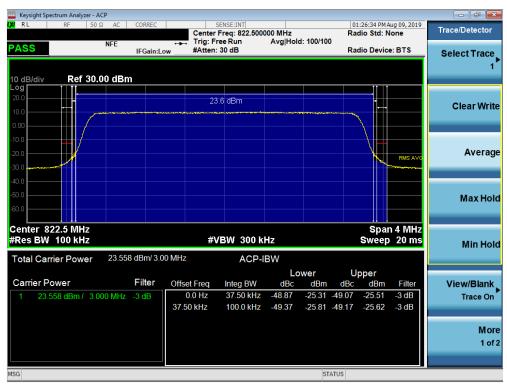
FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 24 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 24 of 38

© 2019 PCTEST Engineering Laboratory, Inc.





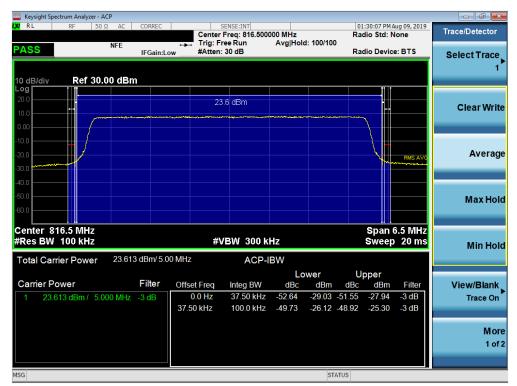
Plot 7-21. Channel Edge Plot (LTE Band 26, 3MHz QPSK - RB Size 15- Low Channel)



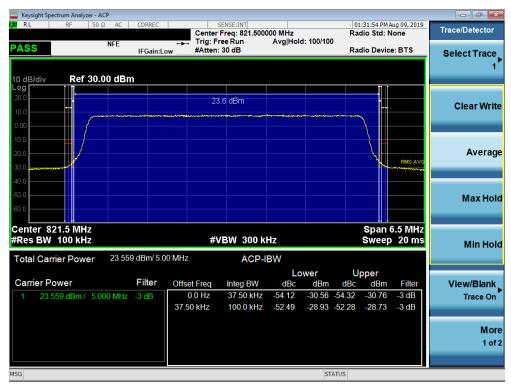
Plot 7-22. Channel Edge Plot (LTE Band 26, 3MHz QPSK - RB Size 15 - High Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 25 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Fage 25 01 36





Plot 7-23. Channel Edge Plot (LTE Band 26, 5MHz QPSK - RB Size 25- Low Channel)



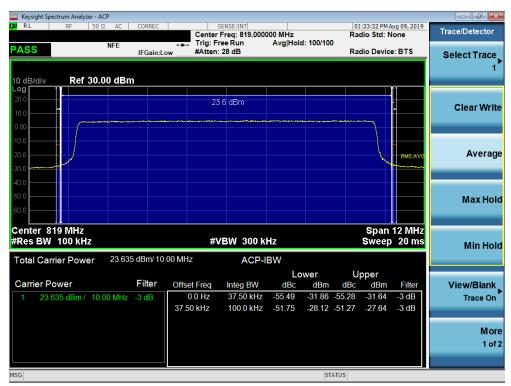
Plot 7-24. Channel Edge Plot (LTE Band 26, 5MHz QPSK - RB Size 25 - High Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 26 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 26 of 38

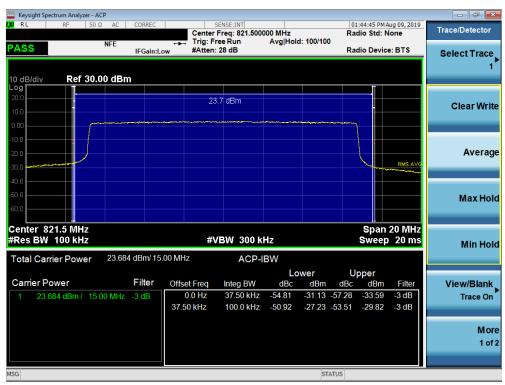
© 2019 PCTEST Engineering Laboratory, Inc.

V 9.0 02/01/2019





Plot 7-25. Channel Edge Plot (LTE Band 26, 10MHz QPSK - RB Size 50)



Plot 7-26. Channel Edge Plot (LTE Band 26, 15MHz QPSK - RB Size 75)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 27 of 38	
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Fage 27 01 30	



#### 7.5 **Conducted Power Output Data** §2.1046 §90.635

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Cond. PWR [dBm]	Cond. PWR [Watts]	Cond. PWR Limit [dBm]	Margin [dB]
814.70	1.4	QPSK	24.18	0.262	50.00	-25.82
823.30	1.4	QPSK	24.13	0.259	50.00	-25.87
814.70	1.4	16-QAM	23.37	0.217	50.00	-26.63
823.30	1.4	16-QAM	23.36	0.217	50.00	-26.64
814.70	1.4	64-QAM	22.27	0.169	50.00	-27.73
823.30	1.4	64-QAM	22.37	0.173	50.00	-27.63
815.50	3	QPSK	24.20	0.263	50.00	-25.80
822.50	3	QPSK	24.18	0.262	50.00	-25.82
815.50	3	16-QAM	23.44	0.221	50.00	-26.56
822.50	3	16-QAM	23.42	0.220	50.00	-26.58
815.50	3	64-QAM	22.32	0.171	50.00	-27.68
822.50	3	64-QAM	22.10	0.162	50.00	-27.90
816.50	5	QPSK	24.23	0.265	50.00	-25.77
821.50	5	QPSK	24.21	0.264	50.00	-25.79
816.50	5	16-QAM	23.46	0.222	50.00	-26.54
821.50	5	16-QAM	23.37	0.217	50.00	-26.63
816.50	5	64-QAM	22.19	0.166	50.00	-27.81
821.50	5	64-QAM	22.00	0.158	50.00	-28.00
819.00	10	QPSK	24.38	0.274	50.00	-25.62
819.00	10	16-QAM	23.60	0.229	50.00	-26.40
819.00	10	64-QAM	22.15	0.164	50.00	-27.85
821.50	15	QPSK	24.48	0.281	50.00	-25.52
821.50	15	16-QAM	23.71	0.235	50.00	-26.29
821.50	15	64-QAM	22.24	0.167	50.00	-27.76

Table 7-2. LTE Band 26 Conducted Power Output Data

## **NOTES:**

- 1. For LTE mode, the device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB.
- 2. This unit was tested with its standard battery.

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 28 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 28 01 38



#### Radiated Power (ERP) 7.6 §22.913(a.2) §90.542(a)(7)

#### **Test Overview**

Effective Radiated Power (ERP) 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. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

## **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 2.2.17

## **Test Settings**

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 29 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Fage 29 01 36



### **Test Setup**

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

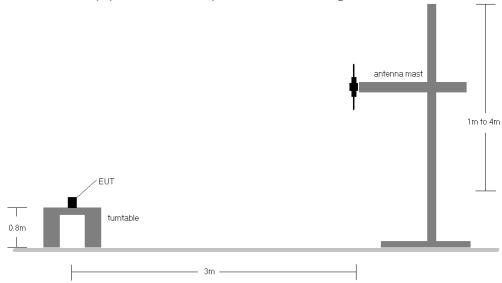


Figure 7-4. Radiated Test Setup <1GHz

## **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) This unit was tested with its standard battery.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
821.50	15	QPSK	Н	198	370	1/0	16.79	6.70	21.34	0.136	38.45	-17.11
821.50	15	16-QAM	Н	198	370	1/0	15.72	6.70	20.27	0.106	38.45	-18.18
821.50	15	64-QAM	Н	198	370	1/0	14.56	6.70	19.11	0.081	38.45	-19.34
821.50	15	QPSK	V	262	177	1/0	12.50	6.70	17.05	0.051	38.45	-21.40

Table 7-27. ERP Data (Band 26)

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 20 of 29
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 30 of 38



#### **Radiated Spurious Emissions Measurements** 7.7 §2.1053 §90(S)

## **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 horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

# **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 ≥ 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

FCC ID: A3LSMT867U	PETEST LASCRAFORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dogo 21 of 20		
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 31 of 38		
0.0040 DOTEOT E	2010 POTEOT Facility and a Laboratory land				



### **Test Setup**

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

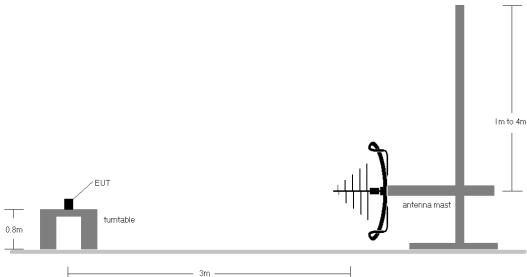


Figure 7-5. Test Instrument & Measurement Setup < 1GHz

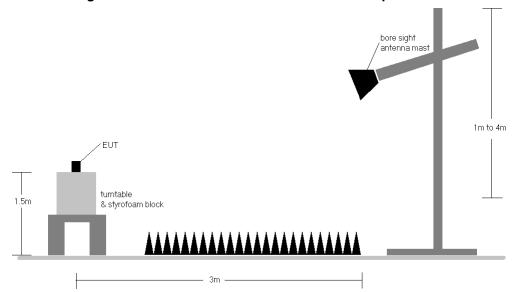


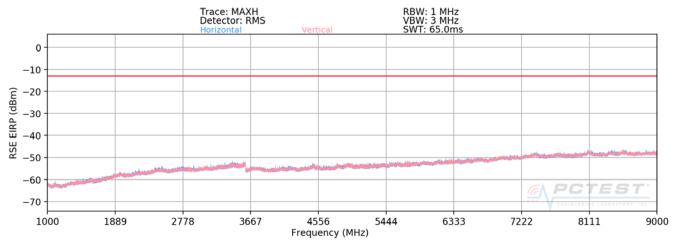
Figure 7-6. Test Instrument & Measurement Setup >1 GHz

# **Test Notes**

- 1. For LTE mode, the device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with 1 RB.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 4. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMT867U	ESCRETATION LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 32 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet		Fage 32 01 38





Plot 7-28. Radiated Spurious Plot above 1GHz (LTE Band 26)

OPERATING FREQUENCY: 816.50 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 5.0 MHz

DISTANCE: 3 meters
LIMIT: -13.00 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]
1633.00	Η	149	329	-75.59	8.85	-66.74	-53.7
2449.50	Н	-	-	-77.54	9.55	-67.98	-55.0
3266.00	Η	-	-	-75.43	9.54	-65.89	-52.9
4082.50	Н	-	-	-75.15	10.05	-65.09	-52.1

Table 7-3. Radiated Spurious Data (LTE Band 26 – Low Channel)

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 33 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	raye 33 UI 36



OPERATING FREQUENCY: 821.50 MHz

MODULATION SIGNAL: **QPSK** 

> BANDWIDTH: 5.0 MHz DISTANCE: 3 meters

> > LIMIT: -13.00 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]
1643.00	Η	155	336	-76.77	8.91	-67.86	-54.9
2464.50	Н	-	-	-78.16	9.61	-68.55	-55.6
3286.00	Н	-	-	-75.49	9.56	-65.93	-52.9

Table 7-4. Radiated Spurious Data (LTE Band 26 – High Channel)

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 24 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 34 of 38



#### Frequency Stability / Temperature Variation 7.8 §2.1055 §90.213

#### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental a.) chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

### **Test Procedure Used**

ANSI/TIA-603-E-2016

## **Test Settings**

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

## **Test Setup**

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

#### **Test Notes**

None

FCC ID: A3LSMT867U	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 25 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 35 of 38



# **Frequency Stability / Temperature Variation** §2.1055, §90.213

OPERATING FREQUENCY: 819,000,000

> CHANNEL: 26740

REFERENCE VOLTAGE: 3.85 **VDC** 

DEVIATION LIMIT:  $\pm 0.00025$  % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	819,000,091	91	0.0000111
100 %		- 20	818,999,975	-25	-0.0000031
100 %		- 10	819,000,001	1	0.0000001
100 %		0	819,000,369	369	0.0000451
100 %		+ 10	818,999,674	-326	-0.0000398
100 %		+ 20	818,999,939	-61	-0.0000074
100 %		+ 30	818,999,630	-370	-0.0000452
100 %		+ 40	818,999,787	-213	-0.0000260
100 %		+ 50	819,000,111	111	0.0000136
BATT. ENDPOINT	3.16	+ 20	818,999,818	-182	-0.0000222

Table 7-5. LTE Band 26 Frequency Stability Data

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 26 of 20
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	Page 36 of 38



# Frequency Stability / Temperature Variation §2.1055, §90.213

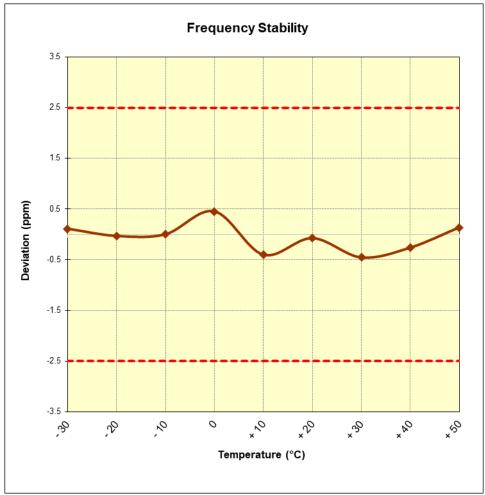


Table 7-6. LTE Band 26 Frequency Stability Data

FCC ID: A3LSMT867U	PCTEST'	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 37 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet	raye or or 36



#### CONCLUSION 8.0

The data collected relate only to the item(s) tested and show that the Samsung Portable Tablet FCC ID: A3LSMT867U complies with all the requirements of Parts 22(H) and 90 of the FCC rules.

FCC ID: A3LSMT867U	ENSINEERING LANGEAFORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 38 of 38
1M1907300131-04.A3L	07/22 - 08/16/2019	Portable Tablet		Fage 36 01 36