

## PART 27 MEASUREMENT REPORT

**Applicant Name:**  
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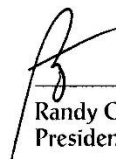
**Date of Testing:**  
8/19/2021 - 8/31/2021  
**Test Report Issue Date:**  
9/3/2021  
**Test Site/Location:**  
PCTEST Lab. Columbia, MD, USA  
**Test Report Serial No.:**  
1M2108160095-03.A3L

<b>FCC ID:</b>	<b>A3LSMA528B</b>
<b>APPLICANT:</b>	<b>Samsung Electronics Co., Ltd.</b>



**Application Type:** Class II Permissive Change  
**Model:** SM-A528B/DS  
**Additional Model(s):** SM-A528B  
**EUT Type:** Portable Handset  
**FCC Classification:** PCS Licensed Transmitter Held to Ear (PCE)  
**FCC Rule Part:** 27  
**Test Procedure(s):** ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01  
**Class II Permissive Change:** Please see FCC change document  
**Original Grant Date:** 08/03/2021

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

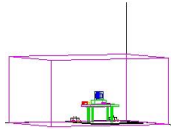


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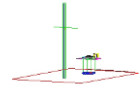
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## FCC Part 27





Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP	
				Max. Power [W]	Max. Power [dBm]
LTE Band 12/17 (10 MHz / 5 MHz)	10 MHz	QPSK	704.0 - 711.0	0.071	18.51
		16QAM	704.0 - 711.0	0.058	17.60
	5 MHz	QPSK	701.5 - 713.5	0.071	18.49
		16QAM	701.5 - 713.5	0.058	17.61
	3 MHz	QPSK	700.5 - 714.5	0.071	18.49
		16QAM	700.5 - 714.5	0.057	17.57
	1.4 MHz	QPSK	699.7 - 715.3	0.069	18.41
		16QAM	699.7 - 715.3	0.058	17.62

Overview Table (<1GHz Bands)




Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP	
				Max. Power [W]	Max. Power [dBm]
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.160	22.03
		16QAM	1720.0 - 1770.0	0.137	21.37
	15 MHz	QPSK	1717.5 - 1772.5	0.163	22.13
		16QAM	1717.5 - 1772.5	0.139	21.44
	10 MHz	QPSK	1715.0 - 1775.0	0.165	22.18
		16QAM	1715.0 - 1775.0	0.140	21.45
	5 MHz	QPSK	1712.5 - 1777.5	0.169	22.27
		16QAM	1712.5 - 1777.5	0.138	21.40
	3 MHz	QPSK	1711.5 - 1778.5	0.160	22.04
		16QAM	1711.5 - 1778.5	0.139	21.43
	1.4 MHz	QPSK	1710.7 - 1779.3	0.165	22.18
		16QAM	1710.7 - 1779.3	0.144	21.59
NR Band n66	20 MHz	$\pi/2$ BPSK	1720.0 - 1770.0	0.124	20.95
		QPSK	1720.0 - 1770.0	0.120	20.81
		16QAM	1720.0 - 1770.0	0.092	19.66
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.126	20.99
		QPSK	1717.5 - 1772.5	0.121	20.83
		16QAM	1717.5 - 1772.5	0.086	19.33
	10 MHz	$\pi/2$ BPSK	1715.0 - 1775.0	0.118	20.73
		QPSK	1715.0 - 1775.0	0.118	20.70
		16QAM	1715.0 - 1775.0	0.080	19.06
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.121	20.83
		QPSK	1712.5 - 1777.5	0.115	20.61
		16QAM	1712.5 - 1777.5	0.081	19.08

Overview Table (>1GHz Bands)

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Mode	Modulation	Tx Frequency Range [MHz]	EIRP	
			Max. Power [W]	Max. Power [dBm]
WCDMA1700	Spread Spectrum	1712.4 - 1752.6	0.152	21.81

Overview Table (>1GHz Bands)

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## 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.

### 1.3 Test Facility / Accreditations

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

- PCTEST is an ISO 17025-2017 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.
- 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.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA528B**. 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 27.

**Test Device Serial No.:** 0362M, 0336M, 0382M

### 2.2 Device Capabilities

This device contains the following capabilities:



850/1900 GSM/GPRS/EDGE, 850/1700/1900, WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01.

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

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

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## 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

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:

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

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  $P_g \text{ [dBm]} - \text{cable loss [dB]}$ .

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 414788 D01.

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## 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

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## 5.0 TEST EQUIPMENT CALIBRATION DATA



Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurement 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
-	AP2	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	AP2
-	ETS	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	ETS
Espec	SH - 241	Environmental Chamber	7/2/2020	Biennial	7/2/2022	92002873
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	1/21/2021	Annual	1/21/2022	101716

**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.

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## 6.0 SAMPLE CALCULATIONS

### Emission Designator

#### WCDMA Emission Designator

**Emission Designator = 4M16F9W**

WCDMA BW = 4.16 MHz  
 F = Frequency Modulation  
 9 = Composite Digital Info  
 W = Combination (Audio/Data)

#### 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) = 50.3 dBc.

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## 7.0 TEST RESULTS

### 7.1 Summary



Company Name: Samsung Electronics Co., Ltd.  
 FCC ID: A3LSMA528B  
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
 Mode(s): WCDMA/LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
RADIATED	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.4
	Effective Radiated Power (LTE Band 12, 17, 71; NR Band n12, n71)	27.50(c)(10)	≤ 3 Watts max. ERP	PASS	Section 7.2
	Equivalent Isotropic Radiated Power (WCDMA AWS; LTE Band 4, 66; NR Band n66)	27.50(d)(10)	≤ 1 Watt max. EIRP	PASS	Section 7.2
	Radiated Spurious Emissions (LTE Band 12, 17, 71; NR Band n12, n71)	2.1053, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.3
	Radiated Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n66)	2.1053, 27.53(h)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.3

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.
- 2) 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.
- 4) 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 EMC Software Tool v1.0.

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## 7.2 Radiated Power (ERP/EIRP)

### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) 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. All measurements are performed as RMS average measurements while the EUT is operating 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

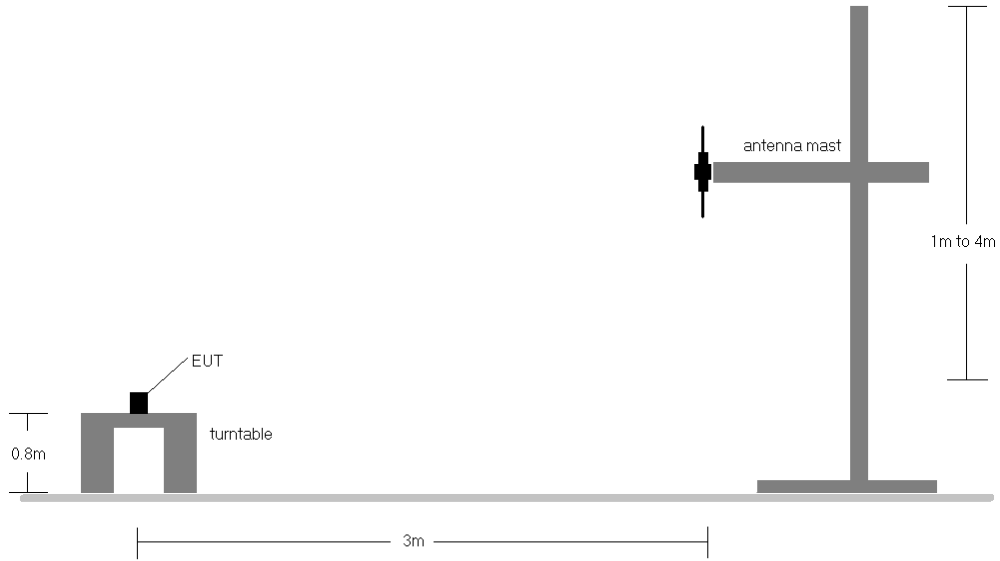
### Test Settings

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 x span / 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

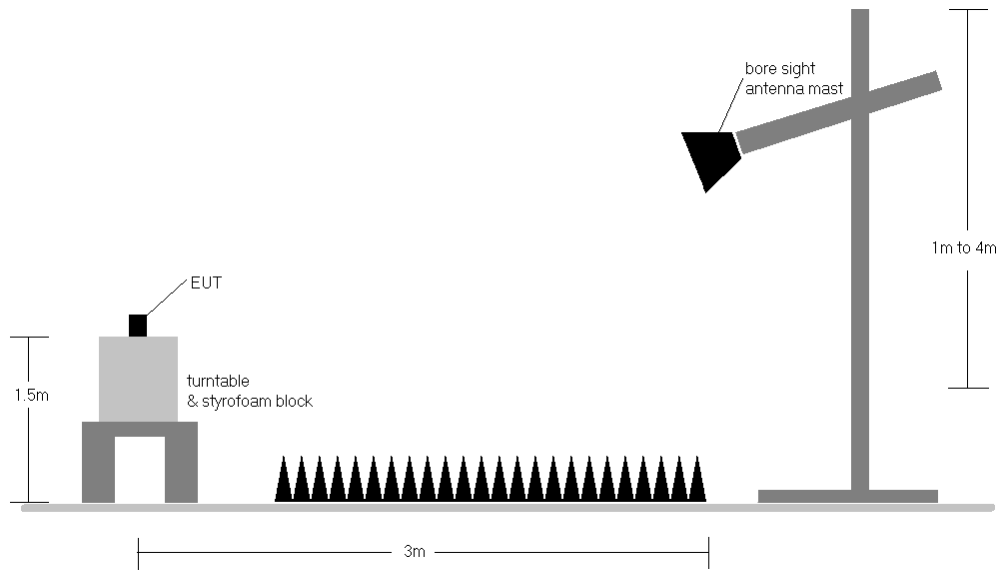
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**Test Setup**

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



**Figure 7-1. Radiated Test Setup <1GHz**





**Figure 7-2. Radiated Test Setup >1GHz**

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## 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.
- 3) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

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Bandwidth	Modulation	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.0	H	278	189	3.48	1 / 49	15.94	17.27	0.053	34.77	-17.50
	QPSK	707.5	H	282	185	3.52	1 / 49	16.43	17.80	0.060	34.77	-16.97
	QPSK	711.0	H	280	187	3.57	1 / 49	17.09	<b>18.51</b>	0.071	34.77	-16.26
	16-QAM	711.0	H	280	187	3.57	1 / 49	16.18	17.60	0.058	34.77	-17.17
5 MHz	QPSK	701.5	H	278	189	3.45	1 / 12	16.08	17.38	0.055	34.77	-17.40
	QPSK	707.5	H	282	185	3.52	1 / 12	16.67	18.05	0.064	34.77	-16.72
	QPSK	713.5	H	280	187	3.70	1 / 12	16.94	<b>18.49</b>	0.071	34.77	-16.29
	16-QAM	713.5	H	280	187	3.70	1 / 12	16.06	17.61	0.058	34.77	-17.16
10 MHz	Opposite Pol.	711.0	V	160	178	3.67	1 / 49	14.99	16.51	0.045	34.77	-18.26

Table 7-2. ERP Data (LTE Band 12/17)

Bandwidth	Modulation	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
3 MHz	QPSK	700.5	H	278	189	3.39	1 / 7	16.05	17.29	0.054	34.77	-17.49
	QPSK	707.5	H	282	185	3.52	1 / 7	16.62	18.00	0.063	34.77	-16.78
	QPSK	714.5	H	280	187	3.71	1 / 7	16.93	<b>18.49</b>	0.071	34.77	-16.28
	16-QAM	714.5	H	280	187	3.71	1 / 7	16.01	17.57	0.057	34.77	-17.20
1.4 MHz	QPSK	699.7	H	278	189	3.33	1 / 3	15.94	17.11	0.051	34.77	-17.66
	QPSK	707.5	H	282	185	3.52	1 / 3	16.41	17.79	0.060	34.77	-16.98
	QPSK	715.3	H	280	187	3.72	1 / 3	16.84	<b>18.41</b>	0.069	34.77	-16.36
	16-QAM	715.3	H	280	187	3.72	1 / 3	16.05	17.62	0.058	34.77	-17.15



Table 7-3. ERP Data (LTE Band 12)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.4	WCDMA1700	H	146	14	12.27	9.54	<b>21.81</b>	<b>0.152</b>	30.00	-8.19
1732.6	WCDMA1700	H	137	21	11.93	9.49	21.42	0.139	30.00	-8.58
1752.6	WCDMA1700	H	101	23	11.58	9.46	21.04	0.127	30.00	-8.96
1712.4	WCDMA1700	V	101	127	10.26	9.47	19.73	0.094	30.00	-10.27

Table 7-4. EIRP Data (WCDMA AWS)



Bandwidth	Modulation	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.0	H	252	21	9.47	1 / 0	11.92	21.39	0.138	30.00	-8.61
	QPSK	1745.0	H	186	21	9.48	1 / 50	12.55	<b>22.03</b>	0.160	30.00	-7.97
	QPSK	1770.0	H	238	14	9.39	1 / 0	11.90	21.29	0.135	30.00	-8.71
	16-QAM	1745.0	H	186	21	9.48	1 / 50	11.89	21.37	0.137	30.00	-8.63
15 MHz	QPSK	1717.5	H	252	21	9.49	1 / 37	11.84	21.34	0.136	30.00	-8.66
	QPSK	1745.0	H	186	21	9.48	1 / 37	12.65	<b>22.13</b>	0.163	30.00	-7.87
	QPSK	1772.5	H	238	14	9.36	1 / 37	11.96	21.32	0.136	30.00	-8.68
	16-QAM	1745.0	H	186	21	9.48	1 / 37	11.96	21.44	0.139	30.00	-8.56
10 MHz	QPSK	1715.0	H	252	21	9.52	1 / 25	11.86	21.38	0.137	30.00	-8.62
	QPSK	1745.0	H	186	21	9.48	1 / 25	12.70	<b>22.18</b>	0.165	30.00	-7.82
	QPSK	1775.0	H	238	14	9.34	1 / 25	11.99	21.33	0.136	30.00	-8.67
	16-QAM	1745.0	H	186	21	9.48	1 / 25	11.97	21.45	0.140	30.00	-8.55
5 MHz	QPSK	1712.5	H	252	21	9.54	1 / 12	11.89	21.44	0.139	30.00	-8.56
	QPSK	1745.0	H	238	31	9.48	1 / 12	12.79	<b>22.27</b>	0.169	30.00	-7.73
	QPSK	1777.5	H	238	14	9.31	1 / 12	12.28	21.59	0.144	30.00	-8.41
	16-QAM	1745.0	H	238	31	9.48	1 / 12	11.92	21.40	0.138	30.00	-8.60
3 MHz	QPSK	1711.5	H	252	21	9.55	1 / 7	11.83	21.38	0.137	30.00	-8.62
	QPSK	1745.0	H	186	21	9.48	1 / 7	12.56	<b>22.04</b>	0.160	30.00	-7.96
	QPSK	1778.5	H	238	14	9.30	1 / 7	12.18	21.49	0.141	30.00	-8.51
	16-QAM	1745.0	H	186	21	9.48	1 / 7	11.95	21.43	0.139	30.00	-8.57
1.4 MHz	QPSK	1710.7	H	252	21	9.56	1 / 3	12.01	21.57	0.144	30.00	-8.43
	QPSK	1745.0	H	186	21	9.48	1 / 3	12.70	<b>22.18</b>	0.165	30.00	-7.82
	QPSK	1779.3	H	238	14	9.29	1 / 3	12.17	21.46	0.140	30.00	-8.54
	16-QAM	1745.0	H	186	21	9.48	1 / 3	12.11	21.59	0.144	30.00	-8.41
5 MHz	Opposite Pol.	1745.0	V	100	79	9.03	1 / 12	11.10	20.13	0.103	30.00	-9.87

Table 7-5. EIRP Data (LTE Band 66/4)

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Bandwidth	Modulation	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	1720.0	H	300	356	9.47	1 / 79	11.48	<b>20.95</b>	0.124	30.00	-9.05
	π/2 BPSK	1745.0	H	302	355	9.48	1 / 26	10.34	19.82	0.096	30.00	-10.18
	π/2 BPSK	1770.0	H	288	355	9.39	1 / 79	10.62	20.01	0.100	30.00	-9.99
	QPSK	1720.0	H	300	356	9.47	1 / 79	11.34	20.81	0.120	30.00	-9.19
	QPSK	1745.0	H	302	355	9.48	1 / 26	10.31	19.79	0.095	30.00	-10.21
	QPSK	1770.0	H	288	355	9.39	1 / 79	10.50	19.89	0.097	30.00	-10.11
15 MHz	16-QAM	1720.0	H	300	356	9.47	1 / 79	10.19	19.66	0.092	30.00	-10.34
	π/2 BPSK	1717.5	H	300	356	9.49	1 / 58	11.50	<b>20.99</b>	0.126	30.00	-9.01
	π/2 BPSK	1745.0	H	302	355	9.48	1 / 20	10.46	19.94	0.099	30.00	-10.06
	π/2 BPSK	1772.5	H	288	355	9.36	1 / 20	10.60	19.96	0.099	30.00	-10.04
	QPSK	1717.5	H	300	356	9.49	1 / 58	11.34	20.83	0.121	30.00	-9.17
	QPSK	1745.0	H	302	355	9.48	1 / 20	10.22	19.70	0.093	30.00	-10.30
10 MHz	QPSK	1772.5	H	288	355	9.36	1 / 20	10.48	19.84	0.096	30.00	-10.16
	16-QAM	1717.5	H	300	356	9.49	1 / 58	9.84	19.33	0.086	30.00	-10.67
	π/2 BPSK	1715.0	H	300	356	9.52	1 / 38	11.21	<b>20.73</b>	0.118	30.00	-9.27
	π/2 BPSK	1745.0	H	302	355	9.48	1 / 13	10.47	19.95	0.099	30.00	-10.05
	π/2 BPSK	1775.0	H	288	355	9.34	1 / 13	10.70	20.03	0.101	30.00	-9.97
	QPSK	1715.0	H	300	356	9.52	1 / 38	11.19	20.70	0.118	30.00	-9.30
5 MHz	QPSK	1745.0	H	302	355	9.48	1 / 13	10.21	19.69	0.093	30.00	-10.31
	QPSK	1775.0	H	288	355	9.34	1 / 13	10.68	20.02	0.101	30.00	-9.98
	16-QAM	1715.0	H	300	356	9.52	1 / 38	9.54	19.06	0.080	30.00	-10.94
	π/2 BPSK	1712.5	H	300	356	9.54	1 / 18	11.29	<b>20.83</b>	0.121	30.00	-9.17
	π/2 BPSK	1745.0	H	302	355	9.48	1 / 6	10.48	19.96	0.099	30.00	-10.04
	π/2 BPSK	1777.5	H	288	355	9.31	1 / 6	10.52	19.84	0.096	30.00	-10.16
20 MHz	QPSK	1712.5	H	300	356	9.54	1 / 18	11.07	20.61	0.115	30.00	-9.39
	QPSK	1745.0	H	302	355	9.48	1 / 6	10.08	19.56	0.090	30.00	-10.44
	QPSK	1777.5	H	288	355	9.31	1 / 6	10.56	19.87	0.097	30.00	-10.13
	16-QAM	1712.5	H	300	356	9.54	1 / 18	9.54	19.08	0.081	30.00	-10.92
20 MHz	QPSK (CP-OFDM)	1720.0	H	300	356	9.47	1 / 79	10.06	19.53	0.090	30.00	-10.47
	QPSK (Opposite Pol.)	1720.0	V	157	364	9.33	1 / 79	9.65	18.98	0.079	30.00	-11.02

Table 7-6. EIRP Data (NR Band n66)

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## 7.3 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 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 RMS 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

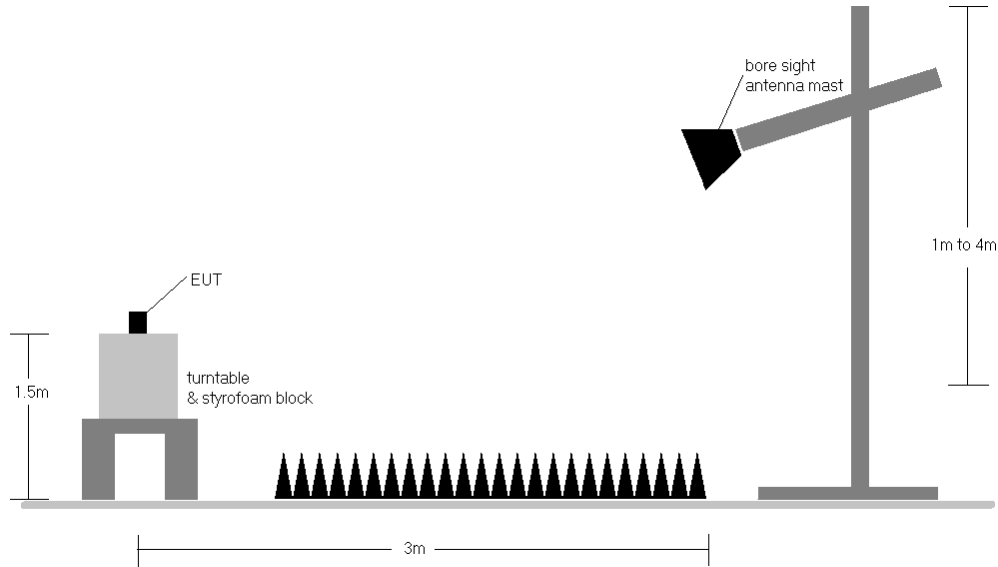
### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq 3 \times$  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

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**Test Setup**

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



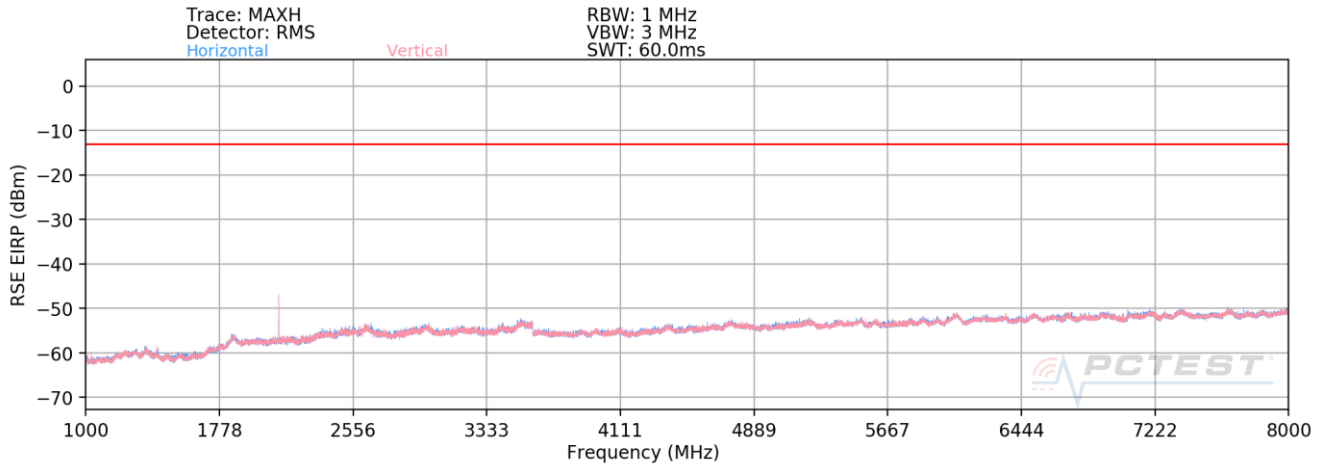
**Figure 7-3. Test Instrument & Measurement Setup**

**Test Notes**

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
  - a)  $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
  - b)  $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$ ; where D is the measurement distance in meters.
- 2) 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.
- 3) This unit was tested with its standard battery.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) 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.
- 6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.
- 8) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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## LTE Band 12/17





**Plot 7-1. Radiated Spurious Plot (LTE Band 12/17)**

<b>Bandwidth (MHz):</b>	10								
<b>Frequency (MHz):</b>	704								
<b>RB / Offset:</b>	1 / 25								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1408.0	V	-	-	-75.76	-2.25	28.99	-66.26	-13.00	-53.26
2112.0	V	112	320	-62.66	0.93	45.27	-49.99	-13.00	-36.99
2816.0	V	-	-	-76.58	1.97	32.39	-62.87	-13.00	-49.87
3520.0	V	-	-	-76.97	3.43	33.46	-61.80	-13.00	-48.80

**Table 7-7. Radiated Spurious Data (LTE Band 12/17 – Low Channel)**



<b>Bandwidth (MHz):</b>	10								
<b>Frequency (MHz):</b>	707.5								
<b>RB / Offset:</b>	1 / 25								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1415.0	V	-	-	-75.55	-2.27	29.18	-66.08	-13.00	-53.08
2122.5	V	114	308	-61.59	0.95	46.36	-48.90	-13.00	-35.90
2830.0	V	-	-	-76.73	1.98	32.25	-63.01	-13.00	-50.01
3537.5	V	-	-	-77.38	3.70	33.32	-61.94	-13.00	-48.94

**Table 7-8. Radiated Spurious Data (LTE Band 12/17 – Mid Channel)**

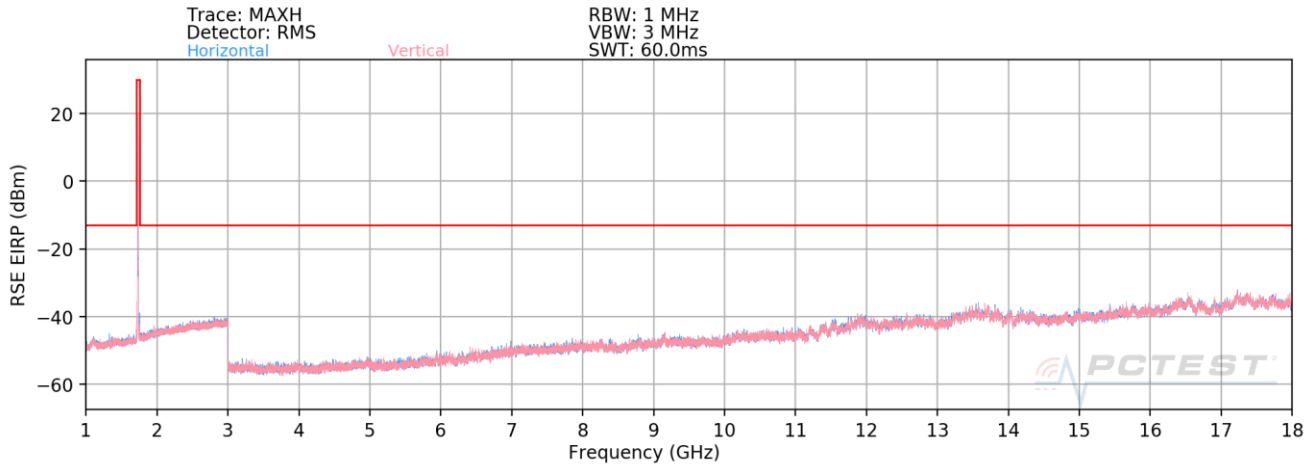
<b>FCC ID:</b> A3LSMA528B		<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
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<b>Bandwidth (MHz):</b>	10								
<b>Frequency (MHz):</b>	711								
<b>RB / Offset:</b>	1 / 25								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.0	V	-	-	-75.77	-2.40	28.83	-66.43	-13.00	-53.43
2133.0	V	122	314	-59.78	1.01	48.23	-47.03	-13.00	-34.03
2844.0	V	-	-	-76.76	2.04	32.28	-62.97	-13.00	-49.97
3555.0	V	-	-	-77.12	3.30	33.18	-62.07	-13.00	-49.07

**Table 7-9. Radiated Spurious Data (LTE Band 12/17 – High Channel)**

<b>FCC ID:</b> A3LSMA528B		<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
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## WCDMA AWS





Plot 7-2. Radiated Spurious Plot (WCDMA AWS)

Mode:	WCDMA RMC								
Channel:	1312								
Frequency (MHz):	1712.4								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3424.8	H	-	-	-80.03	7.48	34.45	-60.80	-13.00	-47.80
5137.2	H	-	-	-80.80	10.28	36.48	-58.78	-13.00	-45.78
6849.6	H	-	-	-82.04	14.65	39.61	-55.65	-13.00	-42.65

7-10. Radiated Spurious Data (WCDMA AWS – Low Channel)



Mode:	WCDMA RMC								
Channel:	1413								
Frequency (MHz):	1732.6								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3465.2	H	-	-	-80.05	7.53	34.48	-60.78	-13.00	-47.78
5197.8	H	-	-	-81.01	9.92	35.91	-59.35	-13.00	-46.35
6930.4	H	-	-	-81.61	14.29	39.68	-55.58	-13.00	-42.58

Table 7-11. Radiated Spurious Data (WCDMA AWS – Mid Channel)

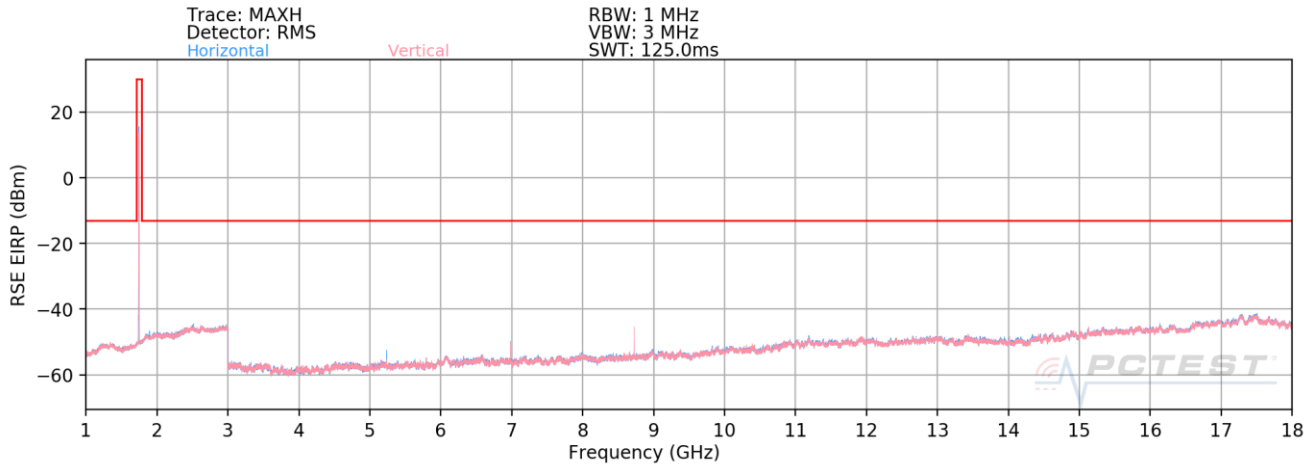
FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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<b>Mode:</b>	WCDMA RMC								
<b>Channel:</b>	1513								
<b>Frequency (MHz):</b>	1752.6								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3505.2	H	-	-	-80.10	7.56	34.46	-60.80	-13.00	-47.80
5257.8	H	-	-	-81.60	10.34	35.74	-59.52	-13.00	-46.52
7010.4	H	-	-	-82.46	14.92	39.46	-55.80	-13.00	-42.80

**Table 7-12. Radiated Spurious Data (WCDMA AWS – High Channel)**

<b>FCC ID:</b> A3LSMA528B		<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
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## LTE Band 66/4



Plot 7-3. Radiated Spurious Plot (LTE Band 66/4)

Bandwidth (MHz):	20
Frequency (MHz):	1720
RB / Offset:	1 / 50



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.0	H	128	3	-71.59	3.62	39.03	-56.23	-13.00	-43.23
5160.0	H	255	21	-69.47	6.20	43.73	-51.53	-13.00	-38.53
6880.0	H	261	62	-71.41	8.30	43.89	-51.36	-13.00	-38.36
8600.0	H	268	335	-60.32	8.91	55.59	-39.67	-13.00	-26.67
10320.0	H	199	67	-79.13	11.41	39.28	-55.98	-13.00	-42.98
12040.0	H	-	-	-80.29	14.78	41.49	-53.76	-13.00	-40.76
13760.0	H	-	-	-80.63	14.68	41.05	-54.21	-13.00	-41.21

Table 7-13. Radiated Spurious Data (LTE Band 66/4 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1745
RB / Offset:	1 / 50



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.0	H	140	1	-73.76	2.65	35.89	-59.36	-13.00	-46.36
5235.0	H	252	18	-70.36	5.63	42.27	-52.99	-13.00	-39.99
6980.0	H	246	65	-69.05	7.58	45.53	-49.73	-13.00	-36.73
8725.0	H	258	337	-62.70	8.89	53.19	-42.07	-13.00	-29.07
10470.0	H	-	-	-80.48	11.54	38.06	-57.20	-13.00	-44.20
12215.0	H	-	-	-80.28	13.86	40.58	-54.68	-13.00	-41.68

Table 7-14. Radiated Spurious Data (LTE Band 66/4 – Mid Channel)

FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2108160095-03.A3L	Test Dates: 8/19/2021 - 08/31/2021	EUT Type: Portable Handset		Page 23 of 31

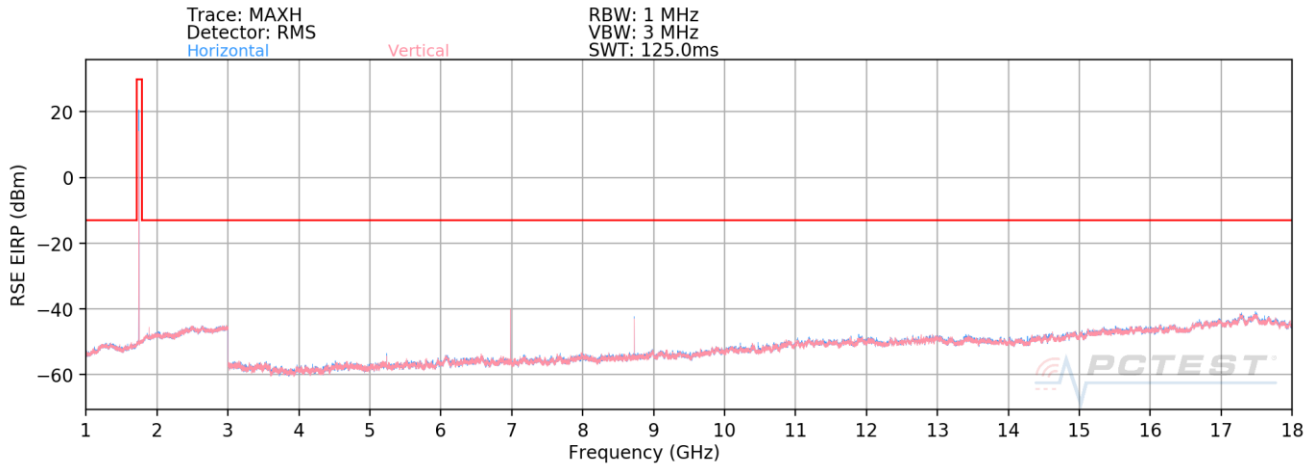
Bandwidth (MHz):	20								
Frequency (MHz):	1770								
RB / Offset:	1 / 50								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.0	H	139	10	-72.41	3.52	38.11	-57.15	-13.00	-44.15
5310.0	H	264	21	-68.77	5.40	43.63	-51.63	-13.00	-38.63
7080.0	H	253	61	-68.43	7.17	45.74	-49.52	-13.00	-36.52
8850.0	H	248	335	-65.25	8.98	50.74	-44.52	-13.00	-31.52
10620.0	H	197	56	-80.01	12.68	39.67	-55.59	-13.00	-42.59
12390.0	H	-	-	-80.39	13.88	40.49	-54.77	-13.00	-41.77
14160.0	H	-	-	-80.38	14.97	41.59	-53.67	-13.00	-40.67

**Table 7-15. Radiated Spurious Data (LTE Band 66/4 – High Channel)**

FCC ID: A3LSMA528B	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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## NR Band n66



Plot 7-4. Radiated Spurious Plot (NR Band n66)

Bandwidth (MHz):	20								
Frequency (MHz):	1720								
RB / Offset:	1 / 53								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.0	H	-	-	-77.09	3.64	33.55	-61.71	-13.00	-48.71
5160.0	H	136	324	-70.53	6.46	42.93	-52.32	-13.00	-39.32
6880.0	H	121	343	-59.29	8.01	55.72	-39.53	-13.00	-26.53
8600.0	H	218	357	-60.03	10.23	57.20	-38.06	-13.00	-25.06
10320.0	H	162	46	-71.11	13.96	49.85	-45.40	-13.00	-32.40
12040.0	H	-	-	-80.12	14.07	40.95	-54.30	-13.00	-41.30
13760.0	H	-	-	-80.69	16.03	42.34	-52.91	-13.00	-39.91

Table 7-16. Radiated Spurious Data (NR Band n66 – Low Channel)



Bandwidth (MHz):	20								
Frequency (MHz):	1745								
RB / Offset:	1 / 53								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.0	H	192	327	-76.23	4.19	34.96	-60.30	-13.00	-47.30
5235.0	H	129	309	-72.28	6.34	41.06	-54.20	-13.00	-41.20
6980.0	H	130	341	-62.32	7.60	52.28	-42.98	-13.00	-29.98
8725.0	H	207	357	-64.16	10.30	53.14	-42.12	-13.00	-29.12
10470.0	H	160	49	-76.42	13.98	44.56	-50.69	-13.00	-37.69
12215.0	H	-	-	-80.38	14.63	41.25	-54.00	-13.00	-41.00
13960.0	H	-	-	-80.44	16.60	43.16	-52.10	-13.00	-39.10

Table 7-17. Radiated Spurious Data (NR Band n66 – Mid Channel)

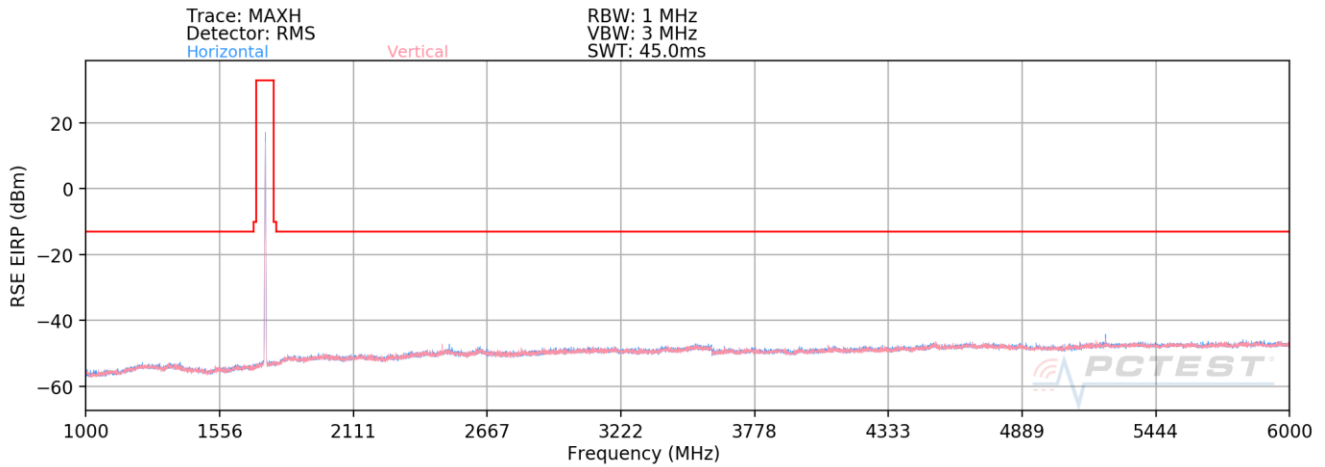
FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth (MHz):	20								
Frequency (MHz):	1770								
RB / Offset:	1 / 53								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.0	H	203	332	-76.01	3.53	34.52	-60.74	-13.00	-47.74
5310.0	H	126	299	-69.77	6.38	43.61	-51.64	-13.00	-38.64
7080.0	H	145	339	-59.06	8.59	56.53	-38.73	-13.00	-25.73
8850.0	H	204	354	-56.84	10.39	60.55	-34.71	-13.00	-21.71
10620.0	H	156	40	-75.70	13.98	45.28	-49.97	-13.00	-36.97
12390.0	H	-	-	-80.46	14.34	40.88	-54.37	-13.00	-41.37
14160.0	H	-	-	-80.62	17.69	44.07	-51.19	-13.00	-38.19

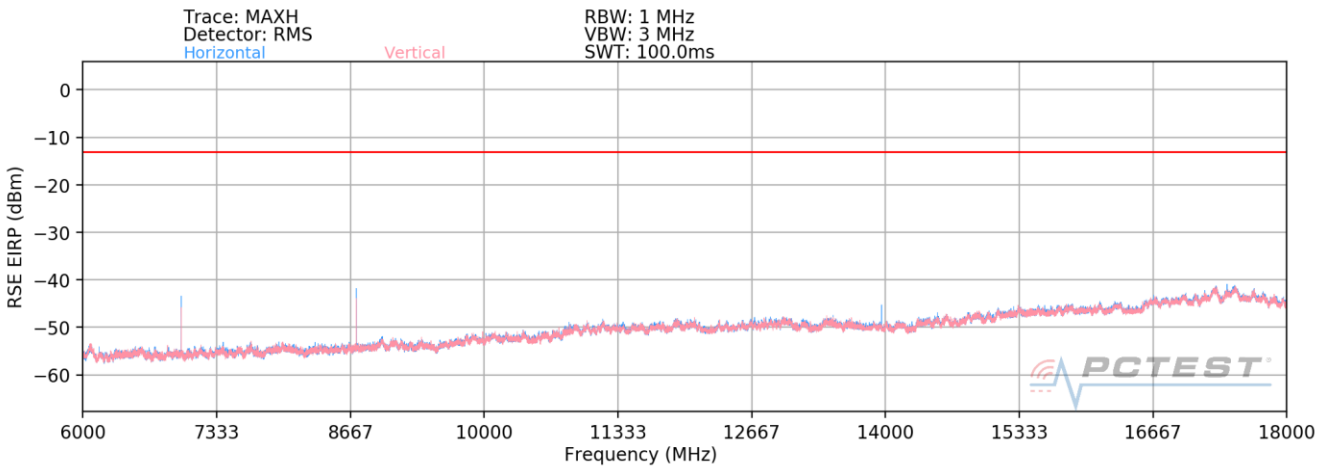
Table 7-18. Radiated Spurious Data (NR Band n66 – High Channel)

FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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**EN-DC – n66 + LTE Band 5**



**Plot 7-5. Radiated Spurious Plot (n66 + Anchor B5 – EN-DC) 1 – 6 GHz**





**Plot 7-6. Radiated Spurious Plot (n66 + Anchor B5 – EN-DC) 6 – 18 GHz**

FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2108160095-03.A3L	Test Dates: 8/19/2021 - 08/31/2021	EUT Type: Portable Handset	Page 27 of 31	

<b>Bandwidth (MHz):</b>	20								
<b>Frequency (MHz):</b>	1745								
<b>RB / Offset:</b>	1 / 53								
<b>Mode:</b>	EN-DC								
<b>Anchor Band:</b>	B5								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1889.0	H	-	-	-76.73	12.13	42.40	-52.85	-13.00	-39.85
2653.5	H	-	-	-76.45	14.65	45.20	-50.06	-13.00	-37.06
2797.5	H	-	-	-78.71	15.52	43.81	-51.45	-13.00	-38.45
5235.0	H	155	339	-62.39	6.34	50.95	-44.31	-13.00	-31.31
6980.0	H	164	29	-63.76	7.60	50.84	-44.42	-13.00	-31.42
8725.0	H	116	342	-61.73	10.30	55.57	-39.69	-13.00	-26.69
10470.0	H	114	29	-79.02	13.98	41.96	-53.29	-13.00	-40.29
13960.0	H	135	122	-76.65	16.60	46.95	-48.31	-13.00	-35.31

**Table 7-19. Radiated Spurious Data (n66 + Anchor B5 – EN-DC)**

<b>FCC ID:</b> A3LSMA528B		<b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2108160095-03.A3L	<b>Test Dates:</b> 8/19/2021 - 08/31/2021	<b>EUT Type:</b> Portable Handset	Page 28 of 31	

## 7.4 Frequency Stability / Temperature Variation

### 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:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental 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.

***For Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.***

### 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

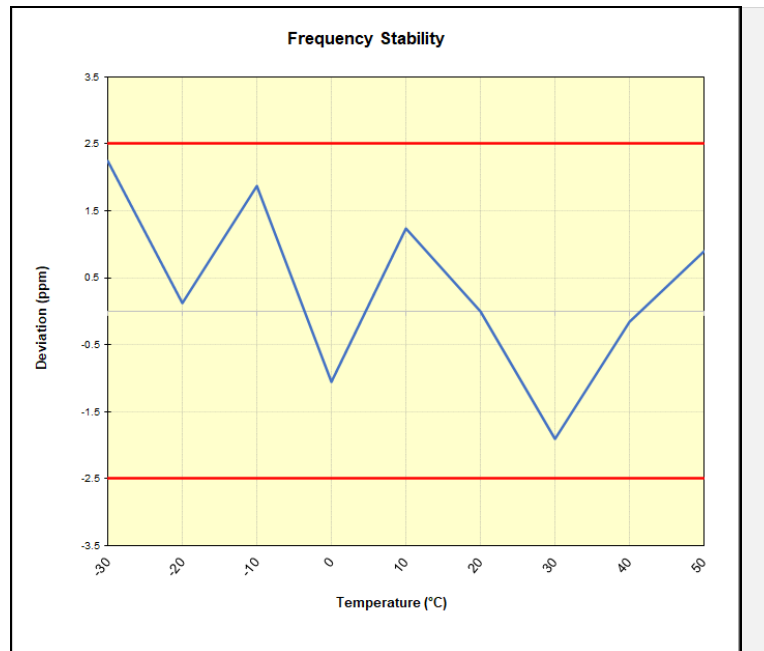
None

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## LTE Band 12/17

		Operating Frequency (Hz):	707,500,000			
		Ref. Voltage (VDC):	4.38			
		Deviation Limit:	± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	
100 %	4.38	- 30	707,593,515	1,583	0.0002237	
		- 20	707,592,015	83	0.0000117	
		- 10	707,593,255	1,323	0.0001870	
		0	707,591,185	-747	-0.0001056	
		+ 10	707,592,804	872	0.0001232	
		+ 20 (Ref)	707,591,932	0	0.0000000	
		+ 30	707,590,583	-1,349	-0.0001906	
		+ 40	707,591,817	-115	-0.0000163	
Battery Endpoint	3.46	+ 20	707,591,425	-507	-0.0000717	

**Table 7-20. LTE Band 12/17 Frequency Stability Data**





**Plot 7-7. LTE Band 12/17 Frequency Stability Chart**

FCC ID: A3LSMA528B		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA528B** complies with all the requirements of Part 27 of the FCC rules.

<b>FCC ID:</b> A3LSMA528B	 <b>PART 27 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2108160095-03.A3L	<b>Test Dates:</b> 8/19/2021 - 08/31/2021	<b>EUT Type:</b> Portable Handset	Page 31 of 31