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MEASUREMENT REPORT
FCC Part 22, 24, & 27 LTE

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

Date of Testing:
6/6-6/16/2016
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1606071029-R1.A3L

FCC ID : **A3LSMJ320A**

APPLICANT: **SAMSUNG ELECTRONICS CO., LTD.**

Application Type:	Class II Permissive Change
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§2; §22; §24; §27
Test Procedure(s):	ANSI/TIA-603-D-2010, KDB 971168 D01 v02r02
EUT Type:	Portable Handset
Model(s):	SM-J320A, SM-J320W8
Test Device Serial No.:	*identical prototype* [S/N: 86786, 83080]
Class II Permissive Change:	Please see FCC change document
Original Grant Date:	2/19/2016

Mode	Tx Frequency (MHz)	Modulation	ERP/EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE Band 12/17	699.7 - 715.3	QPSK	0.063	17.97
LTE Band 12/17	699.7 - 715.3	16QAM	0.062	17.91
LTE Band 12/17	700.5 - 714.5	QPSK	0.083	19.19
LTE Band 12/17	700.5 - 714.5	16QAM	0.063	18.01
LTE Band 12/17	701.5 - 713.5	QPSK	0.088	19.44
LTE Band 12/17	701.5 - 713.5	16QAM	0.066	18.22
LTE Band 12/17	704 - 711	QPSK	0.085	19.32
LTE Band 12/17	704 - 711	16QAM	0.055	17.43
LTE Band 5	824.7 - 848.3	QPSK	0.110	20.41
LTE Band 5	824.7 - 848.3	16QAM	0.082	19.14
LTE Band 5	825.5 - 847.5	QPSK	0.113	20.53
LTE Band 5	825.5 - 847.5	16QAM	0.080	19.05
LTE Band 5	826.5 - 846.5	QPSK	0.122	20.88
LTE Band 5	826.5 - 846.5	16QAM	0.093	19.68
LTE Band 5	829 - 844	QPSK	0.133	21.23
LTE Band 5	829 - 844	16QAM	0.098	19.92
LTE Band 4	1710.7 - 1754.3	QPSK	0.197	22.95
LTE Band 4	1710.7 - 1754.3	16QAM	0.119	20.74
LTE Band 4	1711.5 - 1753.5	QPSK	0.198	22.97
LTE Band 4	1711.5 - 1753.5	16QAM	0.120	20.79
LTE Band 4	1712.5 - 1752.5	QPSK	0.200	23.02
LTE Band 4	1712.5 - 1752.5	16QAM	0.119	20.75
LTE Band 4	1715 - 1750	QPSK	0.202	23.06
LTE Band 4	1715 - 1750	16QAM	0.121	20.83

Mode	Tx Frequency (MHz)	Modulation	EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE Band 4	1717.5 - 1747.5	QPSK	0.199	22.98
LTE Band 4	1717.5 - 1747.5	16QAM	0.119	20.77
LTE Band 4	1720 - 1745	QPSK	0.193	22.85
LTE Band 4	1720 - 1745	16QAM	0.122	20.85
LTE Band 2	1850.7 - 1909.3	QPSK	0.081	19.06
LTE Band 2	1850.7 - 1909.3	16QAM	0.063	17.97
LTE Band 2	1851.5 - 1908.5	QPSK	0.085	19.31
LTE Band 2	1851.5 - 1908.5	16QAM	0.063	18.02
LTE Band 2	1852.5 - 1907.5	QPSK	0.109	20.37
LTE Band 2	1852.5 - 1907.5	16QAM	0.085	19.30
LTE Band 2	1855 - 1905	QPSK	0.112	20.48
LTE Band 2	1855 - 1905	16QAM	0.086	19.36
LTE Band 2	1857.5 - 1902.5	QPSK	0.120	20.79
LTE Band 2	1857.5 - 1902.5	16QAM	0.093	19.69
LTE Band 2	1860 - 1900	QPSK	0.122	20.87
LTE Band 2	1860 - 1900	16QAM	0.096	19.81

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.

This revised Test Report (S/N: 0Y1606071029-R1.A3L) supersedes and replaces the previously issued test report (S/N: 0Y1606071029.A3L) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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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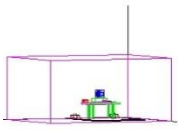
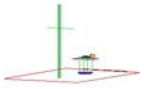


MEASUREMENT REPORT
FCC Part 22, 24, & 27

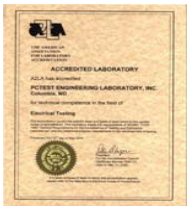


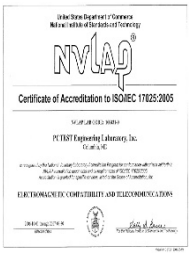
§2.1033 General Information

APPLICANT:	Samsung Electronics Co., Ltd.
APPLICANT ADDRESS:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
TEST SITE:	PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS:	7185 Oakland Mills Road, Columbia, MD 21045 USA
FCC RULE PART(S):	§2; §22; §24; §27
BASE MODEL:	SM-J320A
FCC ID:	A3LSMJ320A
FCC CLASSIFICATION:	PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	86786, 83080 ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST:	6/6-6/16/2016
TEST REPORT S/N:	0Y1606071029-R1.A3L

Test Facility / Accreditations

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





- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) 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 Industry Canada Certification and Engineering Bureau.

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (S*ee Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39º 10'23" N latitude and 76º 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2014 on January 22, 2015.

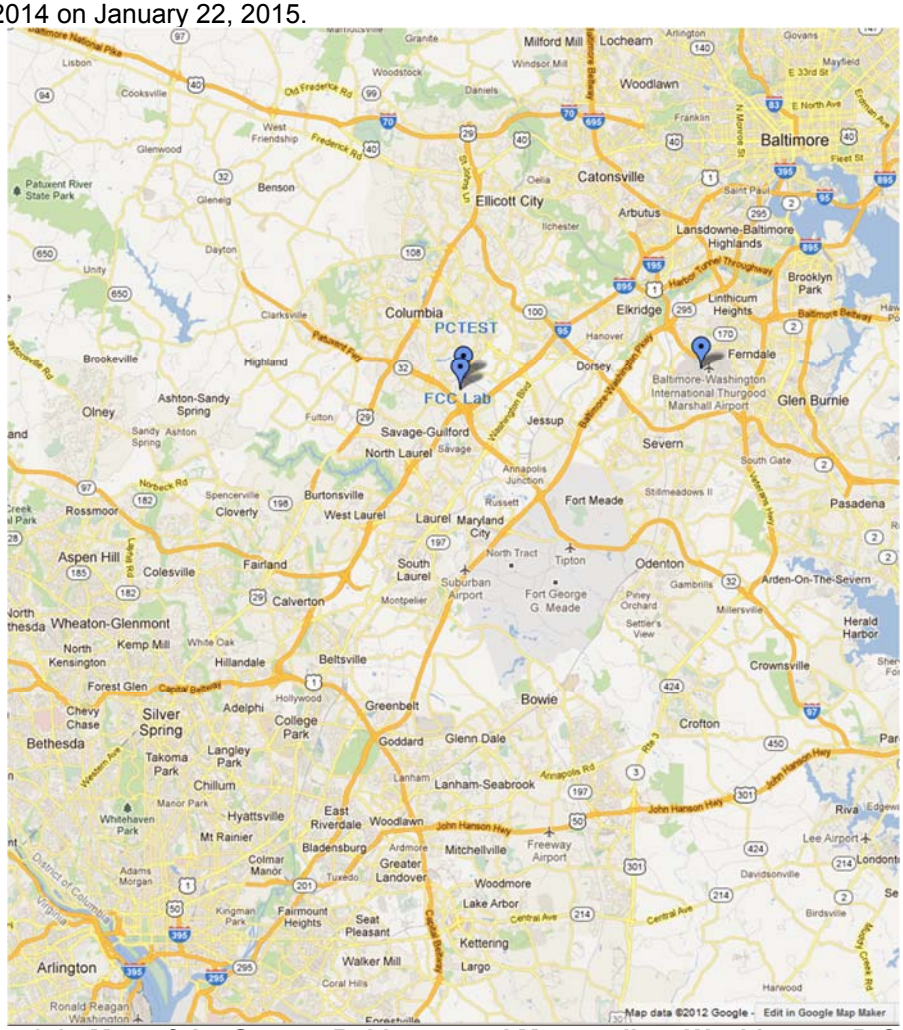


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMJ320A**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, Bluethooth (1x, EDR, LE)

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

2.3 Test Configuration

The Samsung Portable Handset FCC ID: A3LSMJ320A was tested per the guidance of ANSI/TIA-603-D-2010 and KDB 971168 D01 v02r02. 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.

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-D-2010) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v02r02) were used in the measurement of the **Samsung Portable Handset FCC ID: A3LSMJ320A.**

3.2 Block A Frequency Range

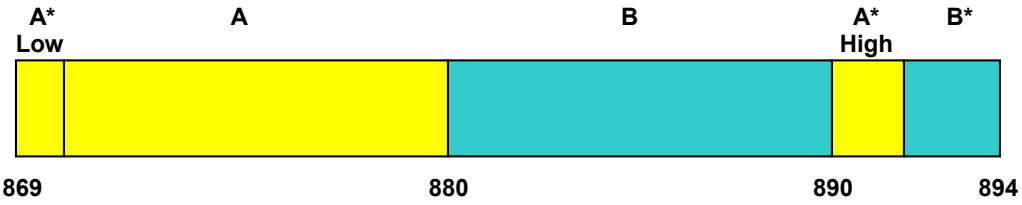
§27.5(c)

698-746 MHz band. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.3 Cellular - Base Frequency Blocks

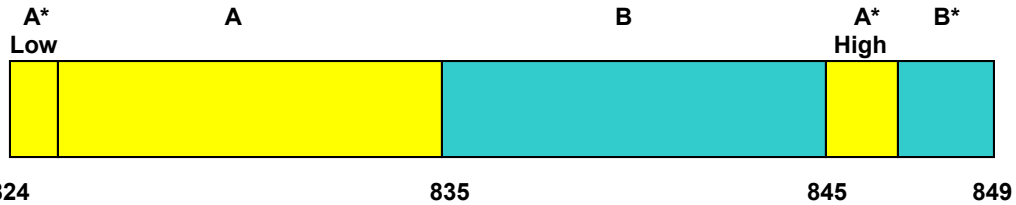
§22.905



BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.4 Cellular - Mobile Frequency Blocks

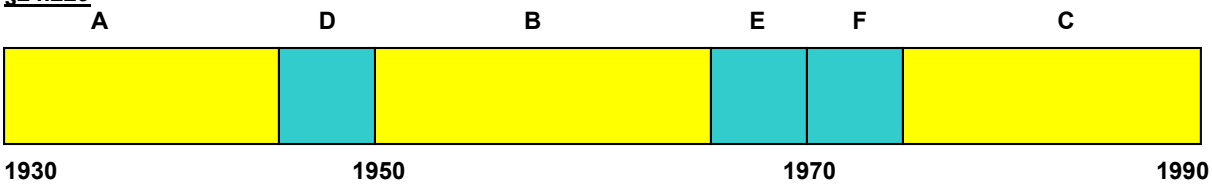
§22.905



BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.5 PCS - Base Frequency Blocks

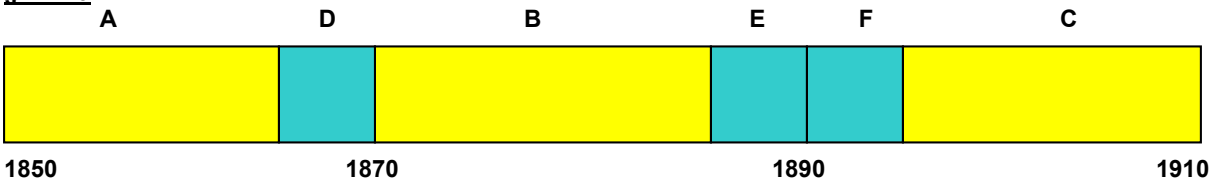
§24.229



BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.6 PCS - Mobile Frequency Blocks

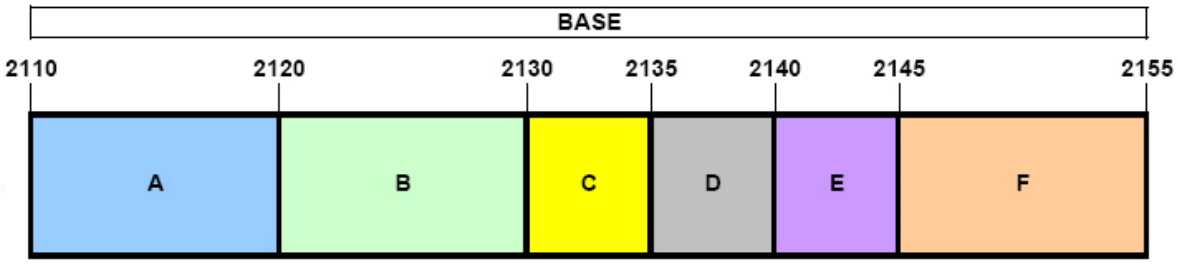
§24.229



BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

3.7 AWS - Base Frequency Blocks

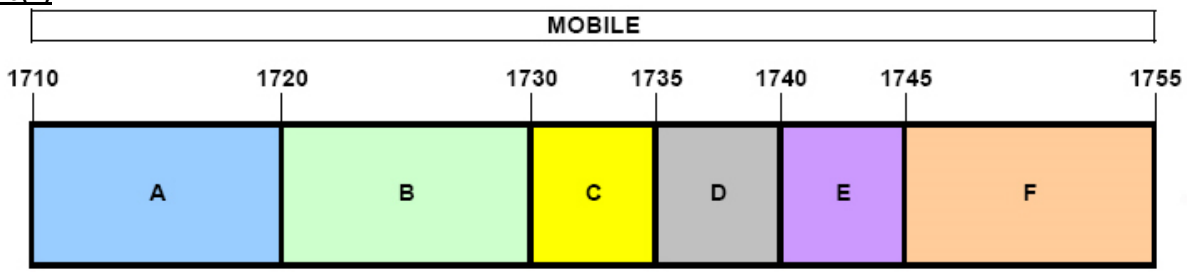
§27.5(h)



BLOCK 1: 2110 – 2120 MHz (A)
BLOCK 2: 2120 – 2130 MHz (B)
BLOCK 3: 2130 – 2135 MHz (C)
BLOCK 4: 2135 – 2140 MHz (D)
BLOCK 5: 2140 – 2145 MHz (E)
BLOCK 6: 2145 – 2155 MHz (F)

3.8 AWS - Mobile Frequency Blocks

§27.5(h)



BLOCK 1: 1710 – 1720 MHz (A)
BLOCK 2: 1720 – 1730 MHz (B)
BLOCK 3: 1730 – 1735 MHz (C)
BLOCK 4: 1735 – 1740 MHz (D)
BLOCK 5: 1740 – 1745 MHz (E)
BLOCK 6: 1745 – 1755 MHz (F)

3.9 Radiated Power and Radiated Spurious Emissions

§2.1053 §22.913(a.2) §22.917(a) §24.232(c) §24.238(a) §27.50(c.10) §27.50(d.4) §27.53(g) §27.53(h)

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. A 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

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. 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 v02r02.

Per the guidance of ANSI/TIA-603-D-2010, 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:

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

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 $P_{g\ [dBm]}$ – 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 $43 + 10\log_{10}(\text{Power}_{[Watts]})$.

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 data shown herein 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

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	4/28/2015	Annual	7/28/2016	RE1
Agilent	8447D	Broadband Amplifier	6/12/2015	Annual	6/12/2016	2443A01900
Agilent	N9038A	MXE EMI Receiver	4/21/2016	Annual	4/21/2017	MY51210133
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	2/26/2016	Annual	2/26/2017	441128
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
K & L	11SH10-3075/U18000	High Pass Filter	7/18/2015	Annual	7/18/2016	11SH10-3075/U18000-4
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/18/2015	Annual	7/18/2016	13SH10-1000/U1000-3
Rhode & Schwarz	TS-PR18	Pre-Amplifier	3/7/2016	Annual	3/7/2017	101622
Rohde & Schwarz	CMW500	Radio Communication Tester	10/21/2015	Annual	10/21/2016	102060
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/17/2015	Annual	7/17/2016	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100071
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	3/30/2016	Biennial	3/30/2018	9105-2404
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	DRH-118	Horn Antenna (1-18 GHz)	7/30/2015	Biennial	7/30/2017	A042511

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.

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

16QAM 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 analzyer. 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).

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
FCC ID: A3LSMJ320A
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MODE (TX)					
22.913(a.2)	Effective Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
27.50(c.10)	Effective Radiated Power (Band 12/17)	< 3 Watts max. ERP		PASS	Section 7.2
24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP		PASS	Section 7.2
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log$_{10}$ (P[Watts]) for all out-of-band emissions		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.

7.2 Radiated Power (ERP/EIRP)

§22.913(a.2) §24.232(c.2) §27.50(c.10) §27.50(d.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – 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 ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 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

Test Setup

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

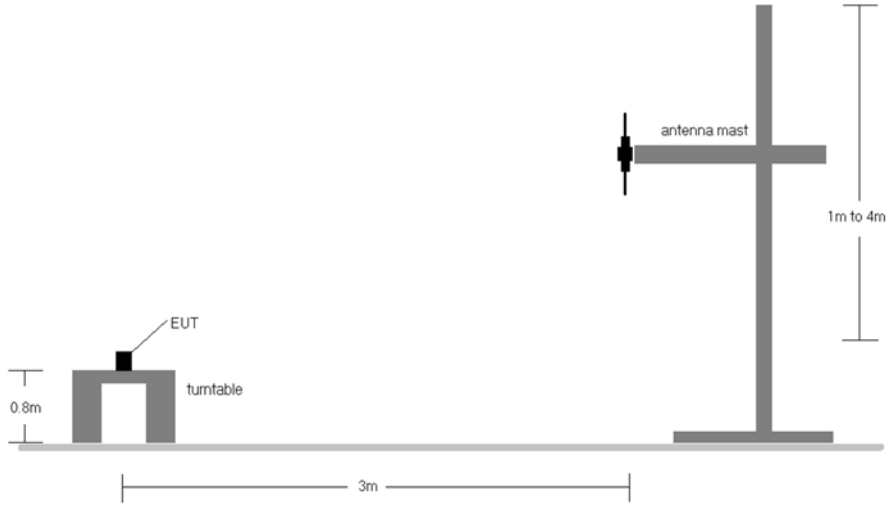


Figure 7-1. Radiated Test Setup <1GHz

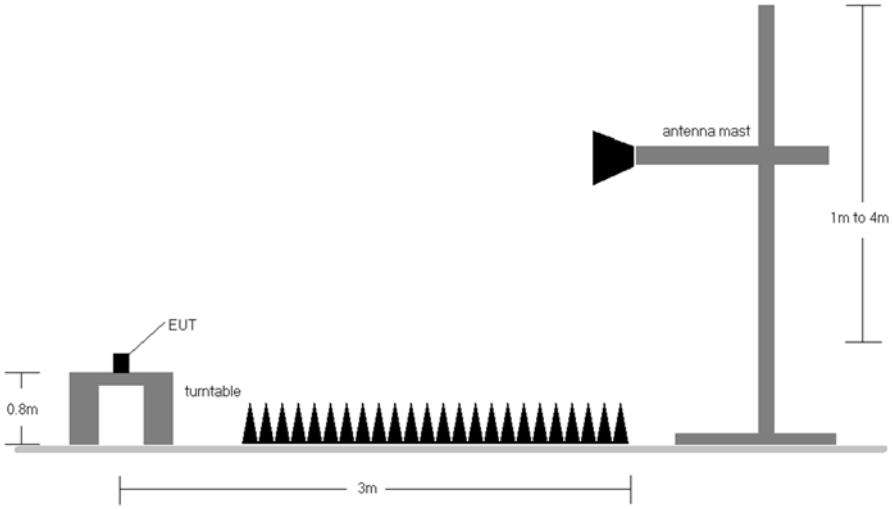


Figure 7-2. Radiated Test Setup >1GHz

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) The ERP's and EIRP's listed were measured using the Class II Permissive change sample, and were found to be within the measurement tolerances of the original certification samples for radiated power. Side by side comparisons have determined that the output power was not changed for these Class II Permissive Change samples.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	172	174	1 / 5	15.83	2.12	17.95	34.77	-16.82
707.50	1.4	QPSK	V	149	167	1 / 0	15.66	2.31	17.97	34.77	-16.80
715.30	1.4	QPSK	V	151	163	1 / 5	13.23	2.52	15.75	34.77	-19.02
699.70	1.4	16-QAM	V	172	174	1 / 5	15.79	2.12	17.91	34.77	-16.86
707.50	1.4	16-QAM	V	149	167	1 / 5	15.32	2.31	17.63	34.77	-17.14
715.30	1.4	16-QAM	V	151	163	1 / 5	13.51	2.52	16.03	34.77	-18.74
700.50	3	QPSK	V	177	181	1 / 0	16.86	2.12	18.98	34.77	-15.79
707.50	3	QPSK	V	153	159	1 / 14	16.88	2.31	19.19	34.77	-15.58
714.50	3	QPSK	V	153	149	1 / 0	16.32	2.50	18.82	34.77	-15.95
700.50	3	16-QAM	V	177	181	1 / 0	14.88	2.12	17.00	34.77	-17.77
707.50	3	16-QAM	V	153	159	1 / 14	14.97	2.31	17.28	34.77	-17.49
714.50	3	16-QAM	V	153	149	1 / 14	15.51	2.50	18.01	34.77	-16.76
701.50	5	QPSK	V	172	181	1 / 0	17.07	2.15	19.22	34.77	-15.55
707.50	5	QPSK	V	172	166	1 / 24	16.77	2.31	19.08	34.77	-15.69
713.50	5	QPSK	V	153	151	1 / 0	16.96	2.48	19.44	34.77	-15.34
701.50	5	16-QAM	V	172	181	1 / 0	15.31	2.15	17.46	34.77	-17.31
707.50	5	16-QAM	V	172	166	1 / 24	14.92	2.31	17.23	34.77	-17.54
713.50	5	16-QAM	V	153	151	1 / 24	15.74	2.48	18.22	34.77	-16.56
704.00	10	QPSK	V	172	179	1 / 0	17.10	2.22	19.32	34.77	-15.46
707.50	10	QPSK	V	180	176	1 / 0	16.35	2.31	18.66	34.77	-16.11
711.00	10	QPSK	V	177	163	1 / 0	16.52	2.41	18.93	34.77	-15.84
704.00	10	16-QAM	V	172	179	1 / 0	15.21	2.22	17.43	34.77	-17.35
707.50	10	16-QAM	V	180	176	1 / 0	14.32	2.31	16.63	34.77	-18.14
711.00	10	16-QAM	V	177	163	1 / 0	14.72	2.41	17.13	34.77	-17.64
713.50	5	QPSK	H	292	82	1 / 0	16.88	2.48	19.36	34.77	-15.42

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	216	91	1 / 5	14.95	5.01	19.96	38.45	-18.49
836.50	1.4	QPSK	H	221	78	1 / 5	15.25	5.16	20.41	38.45	-18.04
848.30	1.4	QPSK	H	212	83	1 / 0	12.68	5.30	17.98	38.45	-20.47
824.70	1.4	16-QAM	H	216	91	1 / 0	13.93	5.01	18.94	38.45	-19.51
836.50	1.4	16-QAM	H	221	78	1 / 0	13.98	5.16	19.14	38.45	-19.31
848.30	1.4	16-QAM	H	212	83	1 / 0	12.52	5.30	17.82	38.45	-20.63
825.50	3	QPSK	H	215	79	1 / 14	15.38	5.02	20.40	38.45	-18.05
836.50	3	QPSK	H	216	82	1 / 0	15.37	5.16	20.53	38.45	-17.92
847.50	3	QPSK	H	207	80	1 / 0	13.86	5.29	19.15	38.45	-19.30
825.50	3	16-QAM	H	215	79	1 / 0	13.96	5.02	18.98	38.45	-19.47
836.50	3	16-QAM	H	216	82	1 / 0	13.89	5.16	19.05	38.45	-19.40
847.50	3	16-QAM	H	207	80	1 / 0	12.86	5.29	18.15	38.45	-20.30
826.50	5	QPSK	H	219	78	1 / 24	15.83	5.03	20.86	38.45	-17.59
836.50	5	QPSK	H	221	78	1 / 0	15.72	5.16	20.88	38.45	-17.57
846.50	5	QPSK	H	209	78	1 / 0	14.63	5.28	19.91	38.45	-18.54
826.50	5	16-QAM	H	219	78	1 / 0	13.94	5.03	18.97	38.45	-19.48
836.50	5	16-QAM	H	221	78	1 / 0	14.52	5.16	19.68	38.45	-18.77
846.50	5	16-QAM	H	209	78	1 / 0	13.14	5.28	18.42	38.45	-20.03
829.00	10	QPSK	H	221	79	1 / 49	15.67	5.06	20.73	38.45	-17.72
836.50	10	QPSK	H	223	82	1 / 0	16.07	5.16	21.23	38.45	-17.22
844.00	10	QPSK	H	206	83	1 / 0	14.30	5.25	19.55	38.45	-18.90
829.00	10	16-QAM	H	221	79	1 / 49	14.50	5.06	19.56	38.45	-18.89
836.50	10	16-QAM	H	223	82	1 / 0	14.76	5.16	19.92	38.45	-18.53
844.00	10	16-QAM	H	206	83	1 / 0	13.04	5.25	18.29	38.45	-20.16
836.50	10	QPSK	V	145	74	1 / 0	15.66	5.16	20.82	38.45	-17.63

Table 7-3. ERP Data (Band 5)

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]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	124	201	1 / 5	14.65	9.66	24.31	30.00	-5.69
1732.50	1.4	QPSK	H	120	199	1 / 5	15.23	9.61	24.84	30.00	-5.16
1754.30	1.4	QPSK	H	120	197	1 / 0	14.54	9.57	24.11	30.00	-5.89
1710.70	1.4	16-QAM	H	124	201	1 / 0	13.17	9.66	22.83	30.00	-7.17
1732.50	1.4	16-QAM	H	120	199	1 / 0	13.82	9.61	23.43	30.00	-6.57
1754.30	1.4	16-QAM	H	120	197	1 / 5	13.25	9.57	22.82	30.00	-7.18
1711.50	3	QPSK	H	127	205	1 / 0	15.01	9.65	24.66	30.00	-5.34
1732.50	3	QPSK	H	124	200	1 / 14	15.43	9.61	25.04	30.00	-4.96
1753.50	3	QPSK	H	120	199	1 / 0	14.73	9.57	24.30	30.00	-5.70
1711.50	3	16-QAM	H	127	205	1 / 0	14.11	9.65	23.76	30.00	-6.24
1732.50	3	16-QAM	H	124	200	1 / 0	14.28	9.61	23.89	30.00	-6.11
1753.50	3	16-QAM	H	120	199	1 / 0	14.17	9.57	23.74	30.00	-6.26
1712.50	5	QPSK	H	127	202	1 / 0	15.32	9.65	24.97	30.00	-5.03
1732.50	5	QPSK	H	120	204	1 / 24	15.67	9.61	25.28	30.00	-4.72
1752.50	5	QPSK	H	120	198	1 / 0	15.64	9.57	25.21	30.00	-4.79
1712.50	5	16-QAM	H	127	202	1 / 0	13.89	9.65	23.54	30.00	-6.46
1732.50	5	16-QAM	H	120	204	1 / 0	14.57	9.61	24.18	30.00	-5.82
1752.50	5	16-QAM	H	120	198	1 / 0	14.09	9.57	23.66	30.00	-6.34
1715.00	10	QPSK	H	130	206	1 / 49	14.84	9.65	24.49	30.00	-5.51
1732.50	10	QPSK	H	123	202	1 / 0	15.43	9.61	25.04	30.00	-4.96
1750.00	10	QPSK	H	121	198	1 / 0	16.08	9.58	25.66	30.00	-4.34
1715.00	10	16-QAM	H	130	206	1 / 0	13.94	9.65	23.59	30.00	-6.41
1732.50	10	16-QAM	H	123	202	1 / 49	14.42	9.61	24.03	30.00	-5.97
1750.00	10	16-QAM	H	121	198	1 / 0	14.68	9.58	24.26	30.00	-5.74
1717.50	15	QPSK	H	126	202	1 / 74	15.62	9.64	25.26	30.00	-4.74
1732.50	15	QPSK	H	125	202	1 / 0	15.45	9.61	25.06	30.00	-4.94
1747.50	15	QPSK	H	118	205	1 / 0	15.46	9.58	25.04	30.00	-4.96
1717.50	15	16-QAM	H	126	202	1 / 74	14.42	9.64	24.06	30.00	-5.94
1732.50	15	16-QAM	H	125	202	1 / 0	14.25	9.61	23.86	30.00	-6.14
1747.50	15	16-QAM	H	118	205	1 / 0	14.41	9.58	23.99	30.00	-6.01
1720.00	20	QPSK	H	127	201	1 / 99	14.66	9.64	24.30	30.00	-5.70
1732.50	20	QPSK	H	123	203	1 / 0	15.36	9.61	24.97	30.00	-5.03
1745.00	20	QPSK	H	113	202	1 / 0	15.68	9.59	25.27	30.00	-4.73
1720.00	20	16-QAM	H	127	201	1 / 99	14.15	9.64	23.79	30.00	-6.21
1732.50	20	16-QAM	H	123	203	1 / 99	14.12	9.61	23.73	30.00	-6.27
1745.00	20	16-QAM	H	113	202	1 / 0	15.19	9.59	24.78	30.00	-5.22
1750.00	10	QPSK	V	249	10	1 / 99	8.64	9.58	18.22	30.00	-11.78

Table 7-4. EIRP Data (Band 4)

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]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	137	33	1 / 5	14.55	9.35	23.90	33.01	-9.11
1880.00	1.4	QPSK	H	141	29	1 / 0	13.87	9.27	23.14	33.01	-9.87
1909.30	1.4	QPSK	H	131	31	1 / 5	13.36	9.25	22.61	33.01	-10.40
1850.70	1.4	16-QAM	H	137	33	1 / 5	13.70	9.35	23.05	33.01	-9.96
1880.00	1.4	16-QAM	H	141	29	1 / 5	13.23	9.27	22.50	33.01	-10.51
1909.30	1.4	16-QAM	H	131	31	1 / 5	12.73	9.25	21.98	33.01	-11.03
1851.50	3	QPSK	H	110	24	1 / 14	14.50	9.35	23.85	33.01	-9.16
1880.00	3	QPSK	H	110	24	1 / 14	13.17	9.27	22.44	33.01	-10.57
1908.50	3	QPSK	H	110	14	1 / 0	12.81	9.25	22.06	33.01	-10.95
1851.50	3	16-QAM	H	110	24	1 / 14	13.35	9.35	22.70	33.01	-10.31
1880.00	3	16-QAM	H	110	24	1 / 14	12.10	9.27	21.37	33.01	-11.64
1908.50	3	16-QAM	H	110	14	1 / 14	11.85	9.25	21.10	33.01	-11.91
1852.50	5	QPSK	H	110	27	1 / 24	14.61	9.34	23.95	33.01	-9.06
1880.00	5	QPSK	H	110	21	1 / 24	13.75	9.27	23.02	33.01	-9.99
1907.50	5	QPSK	H	110	17	1 / 0	13.38	9.24	22.62	33.01	-10.39
1852.50	5	16-QAM	H	110	27	1 / 24	13.59	9.34	22.93	33.01	-10.08
1880.00	5	16-QAM	H	110	21	1 / 24	12.67	9.27	21.94	33.01	-11.07
1907.50	5	16-QAM	H	110	17	1 / 0	12.42	9.24	21.66	33.01	-11.35
1855.00	10	QPSK	H	110	24	1 / 0	14.38	9.34	23.72	33.01	-9.29
1880.00	10	QPSK	H	110	21	1 / 49	13.09	9.27	22.36	33.01	-10.65
1905.00	10	QPSK	H	110	17	1 / 0	13.24	9.24	22.48	33.01	-10.53
1855.00	10	16-QAM	H	110	24	1 / 0	13.21	9.34	22.55	33.01	-10.46
1880.00	10	16-QAM	H	110	21	1 / 49	11.96	9.27	21.23	33.01	-11.78
1905.00	10	16-QAM	H	110	17	1 / 0	12.35	9.24	21.59	33.01	-11.42
1857.50	15	QPSK	H	110	26	1 / 0	14.22	9.33	23.55	33.01	-9.46
1880.00	15	QPSK	H	110	24	1 / 0	12.98	9.27	22.25	33.01	-10.76
1902.50	15	QPSK	H	110	21	1 / 74	12.10	9.23	21.33	33.01	-11.68
1857.50	15	16-QAM	H	110	26	1 / 0	13.26	9.33	22.59	33.01	-10.42
1880.00	15	16-QAM	H	110	24	1 / 0	11.95	9.27	21.22	33.01	-11.79
1902.50	15	16-QAM	H	110	21	1 / 74	11.31	9.23	20.54	33.01	-12.47
1860.00	20	QPSK	H	136	29	1 / 0	14.22	9.32	23.54	33.01	-9.47
1880.00	20	QPSK	H	131	34	1 / 0	14.13	9.27	23.40	33.01	-9.61
1900.00	20	QPSK	H	132	30	1 / 0	13.85	9.22	23.07	33.01	-9.94
1860.00	20	16-QAM	H	136	29	1 / 0	12.68	9.32	22.00	33.01	-11.01
1880.00	20	16-QAM	H	131	34	1 / 0	12.69	9.27	21.96	33.01	-11.05
1900.00	20	16-QAM	H	132	30	1 / 0	12.80	9.22	22.02	33.01	-10.99
1852.50	5	QPSK	V	179	324	1 / 99	11.62	9.27	20.89	33.01	-12.12

Table 7-5. EIRP Data (Band 2)

7.3 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 peak 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 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – 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
5. Detector = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize

Test Setup

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

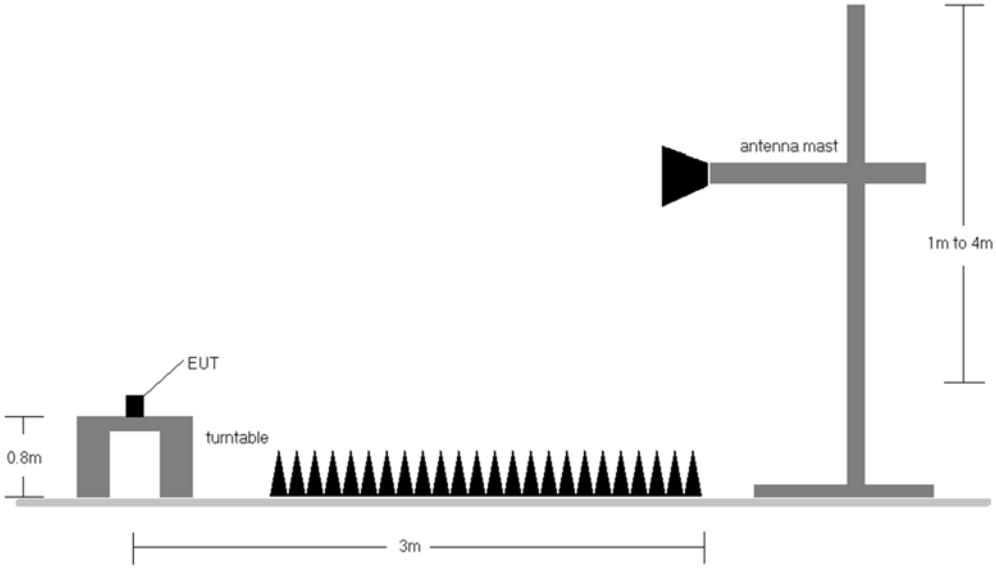


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

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) 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 with the application of a distance correction factor.

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

OPERATING FREQUENCY:	701.50	MHz		
CHANNEL:	23035			
MEASURED OUTPUT POWER:	19.22	dBm	=	0.083 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.22	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1403.00	H	109	262	-40.60	6.19	-34.40	53.6
2104.50	H	100	316	-56.40	6.77	-49.64	68.9
2806.00	H	-	-	-61.73	8.03	-53.70	72.9

Table 7-6. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz		
CHANNEL:	23095			
MEASURED OUTPUT POWER:	19.08	dBm	=	0.081 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.08	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	H	100	298	-38.53	6.23	-32.30	51.4
2122.50	H	100	323	-53.84	6.80	-47.04	66.1
2830.00	H	-	-	-62.41	8.07	-54.34	73.4

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

OPERATING FREQUENCY:	713.50	MHz		
CHANNEL:	23155			
MEASURED OUTPUT POWER:	19.44	dBm	=	0.088 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.44	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	100	293	-43.56	6.27	-37.30	56.7
2140.50	H	100	335	-56.87	6.83	-50.04	69.5
2854.00	H	-	-	-62.14	8.10	-54.04	73.5

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

OPERATING FREQUENCY:	829.00	MHz		
CHANNEL:	20450			
MEASURED OUTPUT POWER:	20.73	dBm	=	0.118 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.73	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1658.00	H	100	242	-58.15	6.21	-51.94	72.7
2487.00	H	104	262	-53.42	6.61	-46.81	67.5
3316.00	H	-	-	-57.88	7.04	-50.84	71.6

Table 7-9. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz		
CHANNEL:	20525			
MEASURED OUTPUT POWER:	21.23	dBm	=	0.133 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	34.23	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	102	176	-59.32	6.13	-53.19	74.4
2509.50	H	104	115	-56.33	6.64	-49.69	70.9
3346.00	H	-	-	-58.76	7.14	-51.62	72.8

Table 7-10. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	844.00	MHz		
CHANNEL:	20600			
MEASURED OUTPUT POWER:	19.55	dBm	=	0.090 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.55	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1688.00	H	100	130	-56.59	6.05	-50.54	70.1
2532.00	H	106	317	-53.22	6.70	-46.51	66.1
3376.00	H	-	-	-58.76	7.24	-51.52	71.1

Table 7-11. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	20000			
MEASURED OUTPUT POWER:	24.49	dBm	=	0.281 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.49	dBc	

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]	[dBc]
3430.00	H	100	347	-48.54	9.55	-38.99	63.5
5145.00	H	113	161	-44.29	11.02	-33.27	57.8
6860.00	H	114	283	-46.39	10.76	-35.63	60.1
8575.00	H	114	238	-47.02	11.31	-35.71	60.2
10290.00	H	116	292	-46.84	12.52	-34.32	58.8
12005.00	H	-	-	-48.26	12.48	-35.78	60.3

Table 7-12. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY:	1732.50	MHz		
CHANNEL:	20175			
MEASURED OUTPUT POWER:	25.04	dBm	=	0.319 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.04	dBc	

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]	[dBc]
3465.00	H	114	347	-47.06	9.64	-37.42	62.5
5197.50	H	113	279	-43.89	10.98	-32.91	58.0
6930.00	H	114	306	-45.58	10.85	-34.73	59.8
8662.50	H	114	360	-50.72	11.53	-39.19	64.2
10395.00	H	-	-	-49.23	12.58	-36.65	61.7

Table 7-13. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY:	1750.00	MHz		
CHANNEL:	20350			
MEASURED OUTPUT POWER:	25.66	dBm	=	0.368 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.66	dBc	

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]	[dBc]
3500.00	H	111	350	-47.60	9.74	-37.86	63.5
5250.00	H	110	157	-42.64	11.05	-31.59	57.2
7000.00	H	109	213	-44.14	11.00	-33.15	58.8
8750.00	H	109	207	-50.59	11.71	-38.88	64.5
10500.00	H	-	-	-50.92	12.56	-38.37	64.0

Table 7-14. Radiated Spurious Data (Band 4 – High Channel)

OPERATING FREQUENCY:	1852.50	MHz		
CHANNEL:	18625			
MEASURED OUTPUT POWER:	23.95	dBm	=	0.249 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.95	dBc	

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]	[dBc]
3705.00	H	104	351	-40.08	10.03	-30.05	54.0
5557.50	H	107	180	-42.30	11.18	-31.12	55.1
7410.00	H	103	23	-41.93	10.95	-30.98	54.9
9262.50	H	104	175	-46.55	11.53	-35.02	59.0
11115.00	H	-	-	-48.75	12.80	-35.95	59.9

Table 7-15. Radiated Spurious Data (Band 2 – Low Channel)

OPERATING FREQUENCY:	1880.00	MHz		
CHANNEL:	18900			
MEASURED OUTPUT POWER:	23.02	dBm	=	0.201 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.02	dBc	

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]	[dBc]
3760.00	H	100	164	-43.40	10.03	-33.37	56.4
5640.00	H	100	2	-38.35	11.18	-27.17	50.2
7520.00	H	100	22	-43.19	10.95	-32.23	55.3
9400.00	H	100	13	-47.07	11.53	-35.54	58.6
11280.00	H	-	-	-48.86	12.80	-36.06	59.1

Table 7-16. Radiated Spurious Data (Band 2 – Mid Channel)

OPERATING FREQUENCY:	1907.50	MHz		
CHANNEL:	19175			
MEASURED OUTPUT POWER:	22.62	dBm	=	0.183 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.62	dBc	

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]	[dBc]
3815.00	H	100	209	-44.75	10.03	-34.72	57.3
5722.50	H	100	3	-37.79	11.18	-26.61	49.2
7630.00	H	100	28	-44.13	10.95	-33.18	55.8
9537.50	H	100	193	-47.19	11.53	-35.66	58.3
11445.00	H	-	-	-51.12	12.80	-38.32	60.9

Table 7-17. Radiated Spurious Data (Band 2 – High Channel)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMJ320A** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.