PCTEST ENGINEERING LABORATORY, INC.
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MEASUREMENT REPORT
FCC Part 27 LTE

Applicant Name:
Samsung Electronics, Co. Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do 443-742, Korea

Date of Testing:
9/27-10/1/2013
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1309261920.A3L

FCC ID : A3LSMN900V

APPLICANT: SAMSUNG ELECTRONICS, CO. LTD.

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s): §2; §27
EUT Type: Portable Handset
Model(s): SM-N900V
Test Device Serial No.: *identical prototype* [S/N: FCC Regression #3]
Class II Permissive Change: Please see FCC change documents.
Original Grant Date: 09/04/2013

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 13	779.5 - 784.5	4M52G7W	QPSK	0.012	10.72
LTE Band 13	779.5 - 784.5	4M53W7W	16QAM	0.007	8.55
LTE Band 13	782	9M01G7W	QPSK	0.009	9.41
LTE Band 13	782	9M00W7W	16QAM	0.008	8.93
LTE Band 4	1712.5 - 1752.5	4M51G7W	QPSK	0.035	15.50
LTE Band 4	1712.5 - 1752.5	4M51W7W	16QAM	0.028	14.45
LTE Band 4	1715 - 1750	8M98G7W	QPSK	0.038	15.79
LTE Band 4	1715 - 1750	9M01W7W	16QAM	0.028	14.52
LTE Band 4	1717.5 - 1747.5	13M4G7W	QPSK	0.028	14.49
LTE Band 4	1717.5 - 1747.5	13M4W7W	16QAM	0.021	13.28
LTE Band 4	1720 - 1745	17M9G7W	QPSK	0.025	13.92
LTE Band 4	1720 - 1745	17M9W7W	16QAM	0.019	12.89

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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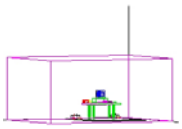
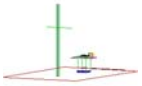


MEASUREMENT REPORT
FCC Part 27



§2.1033 General Information

APPLICANT:	Samsung Electronics, Co. Ltd.
APPLICANT ADDRESS:	129, Samsung-ro, Maetan dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742, Korea
TEST SITE:	PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS:	7185 Oakland Mills Road, Columbia, MD 21045 USA
FCC RULE PART(S):	§2; §27
BASE MODEL:	SM-N900V
FCC ID:	A3LSMN900V
FCC CLASSIFICATION:	PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)
Test Device Serial No.:	FCC Regression #3 ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST:	9/27-10/1/2013
TEST REPORT S/N:	0Y1309261920.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. (*See 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 39° 10'23" N latitude and 76° 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 C63.4-2003 on February 15, 2012.

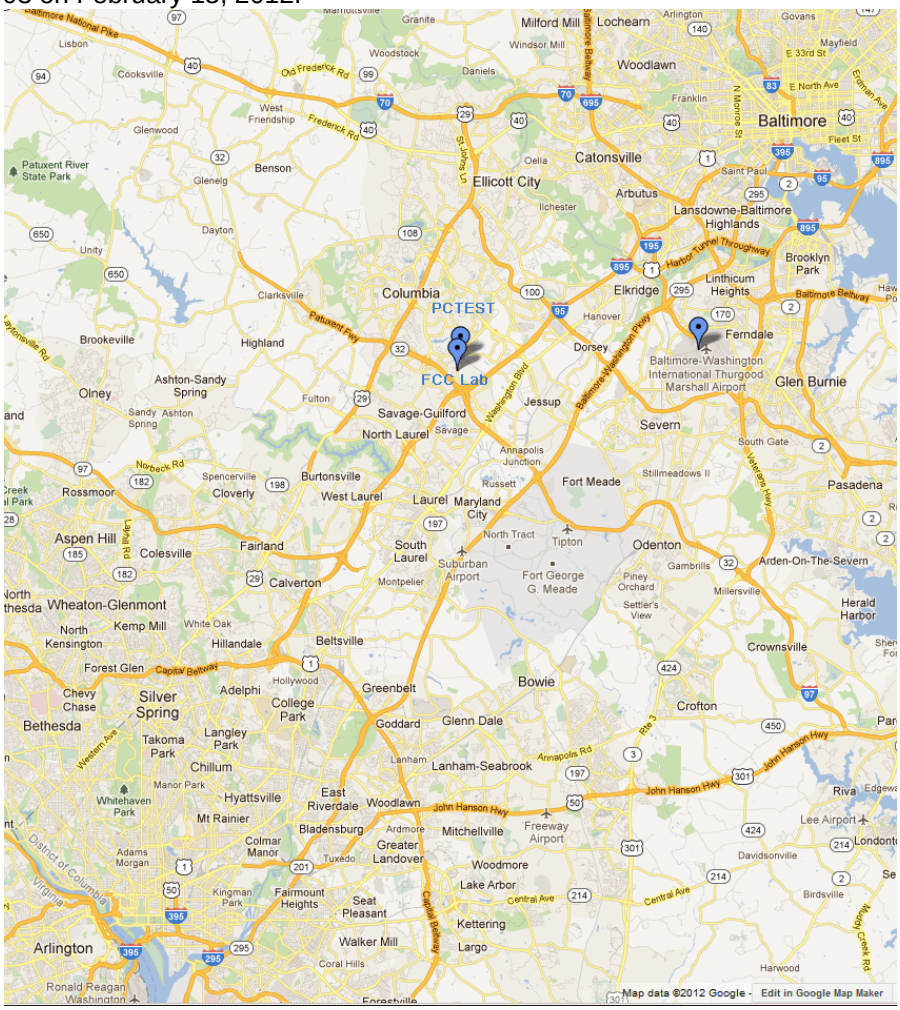


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMN900V**. 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 CDMA/EvDO Rev0/A (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 13, 4 LTE (w/ SVLTE), 802.11a/b/g/n/ac WLAN (DTS/NII), Bluetooth (1x,EDR, LE), NFC, ANT+

2.3 EMI Suppression Device(s)/Modifications

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

2.4 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

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-C-2004) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168) were used in the measurement of the **Samsung Portable Handset FCC ID: A3LSMN900V.**

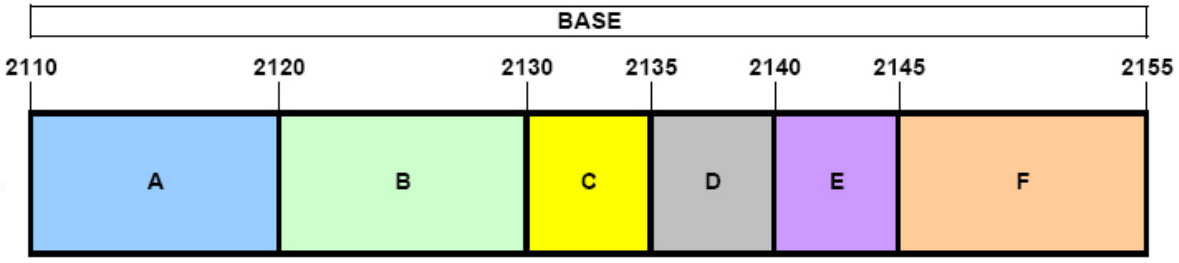
3.1 Block C Frequency Range

§27.5(b)(3)

Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.2 AWS - Base Frequency Blocks

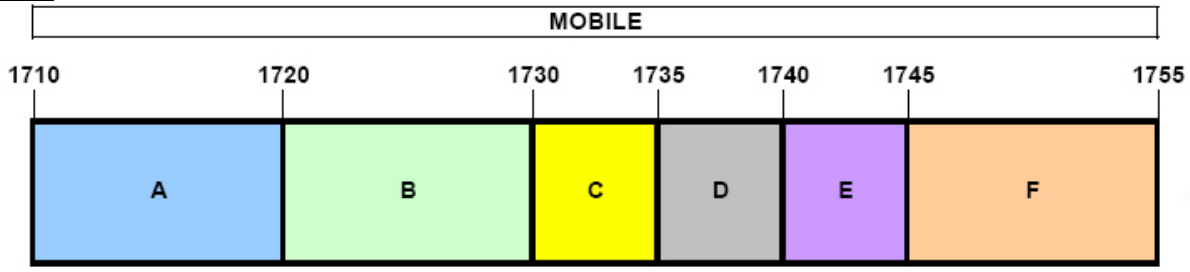
§27.5(h)



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 (E)

3.3 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)

3.4 SVLTE

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

This device is capable of operating in SVLTE mode in the following cases:

Simultaneous Transmit Configurations
1X CDMA 850 Voice + LTE 782 MHz Data
1X CDMA 1900 Voice + LTE 782 MHz Data
1X CDMA 850 Voice + LTE 1732 MHz Data
1X CDMA 1900 Voice + LTE 1732 MHz Data

Table 3-1. SVLTE Transmit Configurations

All modes of SVLTE operation were investigated.

3.5 Radiated Power and Radiated Spurious Emissions

§2.1053 §27.50(b.10) §27.50(d.4) §27.53(f) RSS-139(6.5.1)

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. For measurements above 1GHz 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 below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It 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 78cm high PVC support structure is placed on top of the turntable. A ¾" (~1.9cm) sheet of high density polyethylene 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 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.

Per the guidance of ANSI/TIA-603-C-2004, 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 + $10\log_{10}$(Power $_{[Watts]}$) specified in 27.50 (b) and 27.50 (d) and 27.53 (d).

4.0 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)	3/29/2013	Annual	3/29/2014	N/A
Agilent	8447D	Broadband Amplifier	5/31/2013	Annual	5/31/2014	2443A01900
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/24/2013	Biennial	7/24/2015	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	11/7/2012	Biennial	11/7/2014	128338
Mini-Circuits	VHF-1200+	High Pass Filter	1/17/2013	Annual	1/17/2014	30923
Mini-Circuits	VHF-3100+	High Pass Filter	1/17/2013	Annual	1/17/2014	30841
Mini-Circuits	SSG-4000HP	USB Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	PWR-SENS-4RMS	USB Power Sensor	4/17/2013	Annual	4/17/2014	11210140001
Mini-Circuits	TVA-11-422	RF Power Amp	N/A			QA1303002
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A			100976
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	5/31/2013	Annual	5/31/2014	100071
Rohde & Schwarz	ESU26	EMI Test Receiver	2/25/2013	Annual	2/25/2014	100342
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A			102060
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/14/2011	Biennial	11/14/2013	9105-2404
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/19/2013	Biennial	6/19/2015	A042511

Table 4-1. Test Equipment

Notes:

1. Equipment used for signaling with a calibration date of "N/A" shown in this list was only used for maintaining a link between the piece of equipment and the EUT. This equipment was not used to make direct calibrated measurements.

5.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Combination (Audio/Data)

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).

6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics, Co. Ltd.
FCC ID: A3LSMN900V
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)					
27.50(b.10)	Effective Radiated Power (Band 13)	< 3 Watts max. ERP	RADIATED	PASS	Section 6.2
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 6.3
2.1053 27.53(f) 27.53(h)	Undesirable Emissions	> 43 + $10\log_{10}$ (P[Watts]) for all out-of-band emissions		PASS	Section, 6.4, 6.5, 6.6, 6.7

Table 6-1. 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.

6.2 Effective Radiated Power (ERP)

§27.50(b.10)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Margin [dB]
779.50	5	QPSK	Standard	1/12	4.58	5.91	V	10.49	0.011	-24.28
782.00	5	QPSK	Standard	1/0	4.65	5.96	V	10.61	0.012	-24.16
784.50	5	QPSK	Standard	1/0	4.72	6.00	V	10.72	0.012	-24.05
779.50	5	16QAM	Standard	1/12	2.23	5.91	V	8.14	0.007	-26.63
782.00	5	16QAM	Standard	1/0	2.59	5.96	V	8.55	0.007	-26.22
784.50	5	16QAM	Standard	1/0	2.01	6.00	V	8.01	0.006	-26.76
782.00	10	QPSK	Standard	1/25	3.45	5.96	V	9.41	0.009	-25.36
782.00	10	16QAM	Standard	1/25	2.97	5.96	V	8.93	0.008	-25.84

Table 6-2. ERP Data (Band 13)

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

6.3 Equivalent Isotropic Radiated Power (EIRP)

§27.50(d.4) RSS-139(6.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1712.50	5	QPSK	Standard	1/24	5.61	9.89	V	15.50	0.035	-14.50
1732.50	5	QPSK	Standard	1/24	3.12	9.85	V	12.97	0.020	-17.03
1752.50	5	QPSK	Standard	1/0	4.23	9.80	V	14.03	0.025	-15.97
1712.50	5	16-QAM	Standard	1/24	4.56	9.89	V	14.45	0.028	-15.55
1732.50	5	16-QAM	Standard	1/24	2.07	9.85	V	11.92	0.016	-18.08
1752.50	5	16-QAM	Standard	1/0	3.18	9.80	V	12.98	0.020	-17.02
1715.00	10	QPSK	Standard	1/25	5.90	9.89	V	15.79	0.038	-14.21
1732.50	10	QPSK	Standard	1/49	3.41	9.85	V	13.26	0.021	-16.74
1750.00	10	QPSK	Standard	1/25	4.52	9.80	V	14.32	0.027	-15.68
1715.00	10	16-QAM	Standard	1/25	4.63	9.89	V	14.52	0.028	-15.48
1732.50	10	16-QAM	Standard	1/49	2.14	9.85	V	11.99	0.016	-18.01
1750.00	10	16-QAM	Standard	1/25	3.25	9.80	V	13.05	0.020	-16.95
1717.50	15	QPSK	Standard	1/37	4.60	9.89	V	14.49	0.028	-15.51
1732.50	15	QPSK	Standard	1/74	2.11	9.85	V	11.96	0.016	-18.04
1747.50	15	QPSK	Standard	1/37	3.22	9.80	V	13.02	0.020	-16.98
1717.50	15	16-QAM	Standard	1/37	3.39	9.89	V	13.28	0.021	-16.72
1732.50	15	16-QAM	Standard	1/74	1.23	9.85	V	11.08	0.013	-18.92
1747.50	15	16-QAM	Standard	1/37	2.34	9.80	V	12.14	0.016	-17.86
1720.00	20	QPSK	Standard	1/50	4.03	9.89	V	13.92	0.025	-16.08
1732.50	20	QPSK	Standard	1/99	1.54	9.85	V	11.39	0.014	-18.61
1745.00	20	QPSK	Standard	1/99	2.65	9.80	V	12.45	0.018	-17.55
1720.00	20	16-QAM	Standard	1/50	3.00	9.89	V	12.89	0.019	-17.11
1732.50	20	16-QAM	Standard	1/99	0.51	9.85	V	10.36	0.011	-19.64
1745.00	20	16-QAM	Standard	1/99	1.62	9.80	V	11.42	0.014	-18.58

Table 6-3. EIRP Data (Band 4)

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

6.4 Band 13 Radiated Spurious Emissions

§2.1053 §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	779.50	MHz		
MEASURED OUTPUT POWER:	20.34	dBm	=	0.108 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.34	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2338.50	-82.14	5.79	-76.35	V	96.70
3118.00	-81.07	7.23	-73.84	V	94.18
3897.50	-80.74	8.49	-72.25	V	92.60
4677.00	-80.51	9.46	-71.05	V	91.40
5456.50	-79.98	10.44	-69.54	V	89.88

Table 6-4. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

Band 13 Radiated Spurious Measurements (continued)

§2.1053 §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	782.00	MHz		
MEASURED OUTPUT POWER:	20.07	dBm	=	0.102 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.07	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2346.00	-82.09	5.78	-76.31	V	96.38
3128.00	-81.13	7.26	-73.87	V	93.94
3910.00	-80.76	8.53	-72.23	V	92.30
4692.00	-80.52	9.49	-71.03	V	91.10
5474.00	-79.98	10.46	-69.52	V	89.58

Table 6-5. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

Band 13 Radiated Spurious Measurements (continued)
§2.1053 §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	784.50	MHz		
MEASURED OUTPUT POWER:	19.21	dBm	=	0.083 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.21	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2353.50	-82.03	5.77	-76.26	V	95.47
3138.00	-81.19	7.28	-73.91	V	93.12
3922.50	-80.79	8.58	-72.22	V	91.43
4707.00	-80.52	9.52	-71.00	V	90.22
5491.50	-79.98	10.49	-69.49	V	88.71

Table 6-6. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

6.5 Band 13 Radiated Spurious Emissions 1559 – 1610MHz Band

§2.1053 §27.53(f)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	779.5/782/784.5 MHz		
MEASURED OUTPUT POWER:	20.34/20.07/19.21 dBm	=	0.108/0.102/0.083 W
MODULATION SIGNAL:	QPSK		
DISTANCE:	3 meters		
NARROWBAND EMISSION LIMIT:	-50 dBm		
WIDEBAND EMISSION LIMIT:	-40 dBm/MHz		

FREQUENCY (MHz)	EMISSION TYPE	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	MARGIN (dB)
1559.00	WIDEBAND	-58.51	5.84	-52.67	V	-12.67
1564.00	WIDEBAND	-59.63	5.86	-53.76	V	-13.76

Table 6-7. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

6.6 Band 4 Radiated Spurious Emissions

§2.1053 §27.53(h) RSS-139(6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1715.00	MHz		
MEASURED OUTPUT POWER:	24.24	dBm	=	0.265 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.24	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/H2/V)	(dBc)
3430.00	-55.29	8.11	-47.17	H2	71.41
5145.00	-81.85	10.13	-71.72	H2	95.96
6860.00	-80.53	11.31	-69.22	H2	93.46
8575.00	-79.89	12.98	-66.91	H2	91.15
10290.00	-77.26	13.22	-64.04	H2	88.28
12005.00	-73.88	13.01	-60.87	H2	85.11

Table 6-8. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139(6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1732.50	MHz		
MEASURED OUTPUT POWER:	22.87	dBm	=	0.194 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.87	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/H2/V)	(dBc)
3465.00	-51.40	8.23	-43.17	H2	66.04
5197.50	-81.77	10.18	-71.58	H2	94.45
6930.00	-80.38	11.41	-68.96	H2	91.83
8662.50	-79.77	13.00	-66.77	H2	89.64
10395.00	-77.18	13.15	-64.03	H2	86.90
12127.50	-73.57	13.00	-60.57	H2	83.44

Table 6-9. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

Band 4 Radiated Spurious Measurements (continued)

§2.1053 §27.53(h) RSS-139(6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1750.00	MHz		
MEASURED OUTPUT POWER:	25.62	dBm	=	0.365 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10 MHz			
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.62	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/H2/V)	(dBc)
3500.00	-56.30	8.32	-47.98	H2	73.61
5250.00	-81.63	10.20	-71.43	H2	97.06
7000.00	-80.19	11.48	-68.71	H2	94.34
8750.00	-48.54	12.97	-35.58	H2	61.20
10500.00	-76.84	13.04	-63.79	H2	89.42
12250.00	-73.37	13.03	-60.34	H2	85.96

Table 6-10. Radiated Spurious Data

NOTES:

1. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported with RB Size 1, Offset 12 for Band 13 and RB Size 1, Offset 25 for Band 4.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

6.7 SVLTE Spurious Emissions

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

Tx1 Freq. (f1):	1750.00	MHz
Tx2 Freq. (f2):	1851.25	MHz
Tx1 / Tx2 Modulation:	LTE BAND 4/ CDMA	
LTE Bandwidth:	10	MHz
LTE RB Size / Offset:	1/25	
Distance:	3	meters
Limit:	-13	dBm

Intermod Order	Intermod formula	FREQ (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	Margin [dB]
3rd	2f1-f2	1648.75	-29.06	5.90	-23.16	V	-10.2
3rd	2f2-f1	1952.50	-24.00	4.70	-19.30	V	-6.3

NOTES:

1. All modes of SVLTE were investigated.

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 “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. The worst case test configuration was found with the EUT in the V positioning. The data reported in the table above was measured in this test setup.

4. Intermodulated radiated spurious emissions that do not fall within the 25dB margin of the limit are not reported.

7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMN900V** complies with all the requirements of Parts 2, 27 of the FCC rules for LTE operation only.