



MEASUREMENT REPORT

FCC Part 24 & 27

Applicant Name:

Samsung Electronics Co., Ltd.
416 Maetan 3-Dong, Yeongtong-gu
Suwon-si, Gyeonggi-do
443-742, Republic of Korea

Date of Testing:

06/01/12 - 06/08/12

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0Y1205300757.A3L

FCC ID : A3LSCHR820

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; §24; §27

EUT Type:

Portable Handset

Model(s):

SCH-R820

Test Device Serial No.:

identical prototype [S/N: N/A]

Class II Permissive Change:

Please see FCC change documents.

Original Grant Date:

04/03/2012

Mode	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
					Max. Power (W)	Max. Power (dBm)
LTE Band 4	1.4	1710.7 - 1754.3	1M08G7D	QPSK	0.109	20.38
LTE Band 4	1.4	1710.7 - 1754.3	1M08W7D	16QAM	0.084	19.26
LTE Band 4	3.0	1711.5 - 1753.5	2M68G7D	QPSK	0.112	20.50
LTE Band 4	3.0	1711.5 - 1753.5	2M68W7D	16QAM	0.088	19.45
LTE Band 4	5.0	1712.5 - 1752.5	4M48G7D	QPSK	0.110	20.42
LTE Band 4	5.0	1712.5 - 1752.5	4M47W7D	16QAM	0.088	19.46
LTE Band 2	1.4	1850.7 - 1909.3	1M09G7D	QPSK	0.164	22.15
LTE Band 2	1.4	1850.7 - 1909.3	1M09W7D	16QAM	0.150	21.75
LTE Band 2	3.0	1851.5 - 1908.5	2M69G7D	QPSK	0.166	22.20
LTE Band 2	3.0	1851.5 - 1908.5	2M70W7D	16QAM	0.133	21.24
LTE Band 2	5.0	1852.5 - 1907.5	4M46G7D	QPSK	0.147	21.68
LTE Band 2	5.0	1852.5 - 1907.5	4M46W7D	16QAM	0.120	20.80

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. 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.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortanez
President



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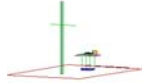
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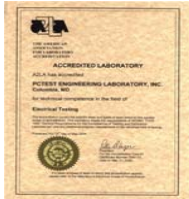


§2.1033 General Information

APPLICANT: Samsung Electronics Co., Ltd.
APPLICANT ADDRESS: 416 Maetan 3-Dong, Yeongtong-gu
 Suwon-si, Gyeonggi-do, 443-742, Republic of Korea
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §24; §27
BASE MODEL: SCH-R820
FCC ID: A3LSCHR820
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE: $\pm 0.00025\%$ (2.5 ppm)
Test Device Serial No.: N/A ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: 06/01/12 - 06/08/12
TEST REPORT S/N: 0Y1205300757.A3L

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab. located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) 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 (2451A-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 (2451A-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.

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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.

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 in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. 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 January 28, 2009.

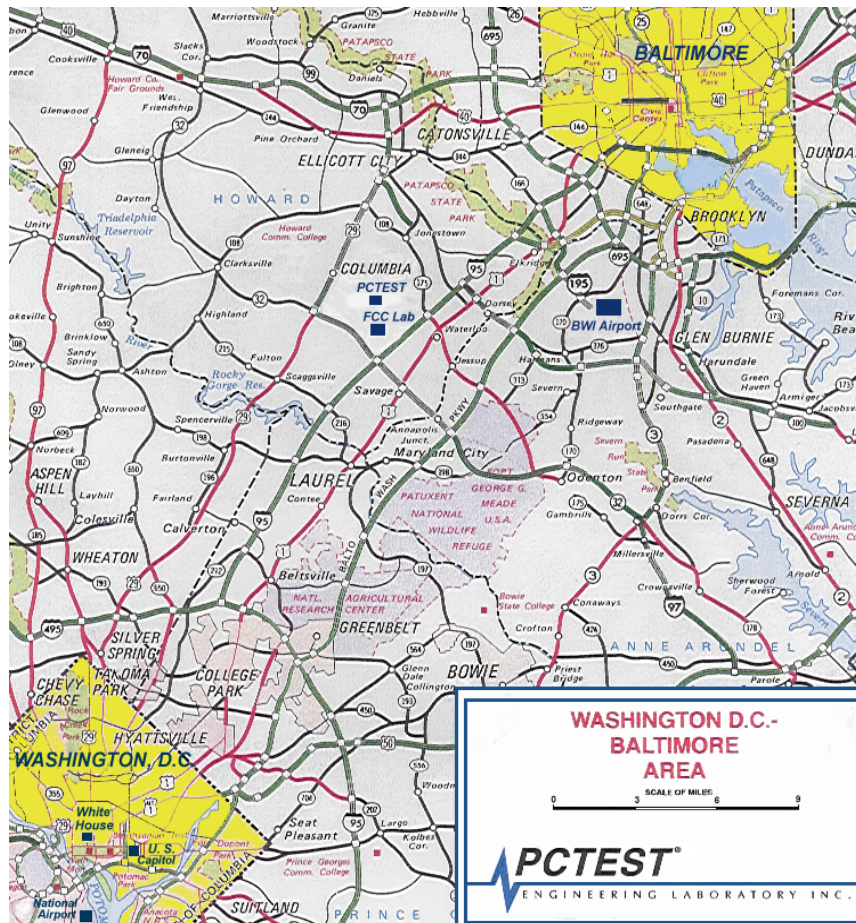


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSCHR820**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Samsung / Model: SCH-R820	A3LSCHR820	Portable Handset

Table 2-1. EUT Equipment Description

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 CDMA/EvDO (BC0, BC15, BC1), Band 2, 4 LTE (1.4, 3, 5 MHz)

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..

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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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) was used in the measurement of the measurement of the **Samsung Portable Handset FCC ID: A3LSCHR820**.

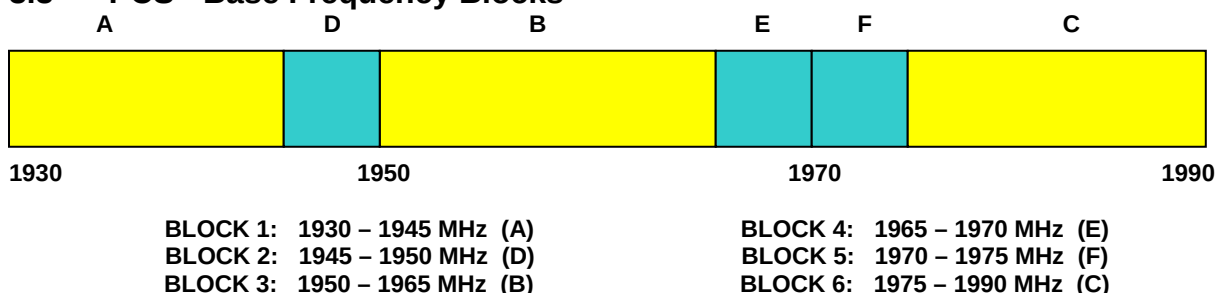
Deviation from Measurement Procedure.....None

3.2 Occupied Bandwidth Emission Limits

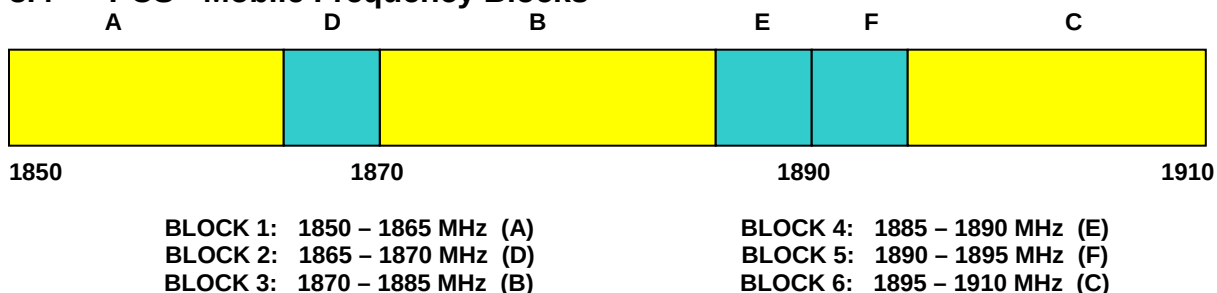
§2.1049, §27.53(g)(1), §27.53(l)(6), RSS-Gen (4.6.1)

- a. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB.
- b. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

3.3 PCS - Base Frequency Blocks



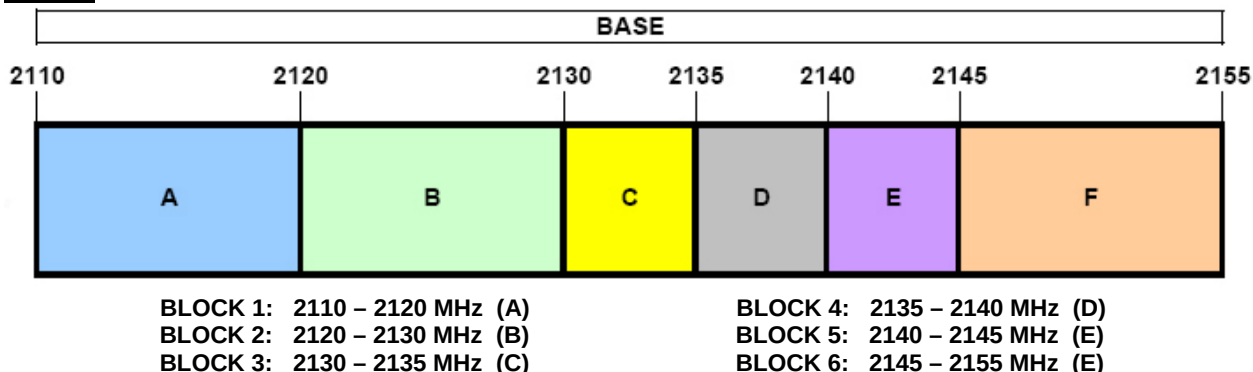
3.4 PCS - Mobile Frequency Blocks



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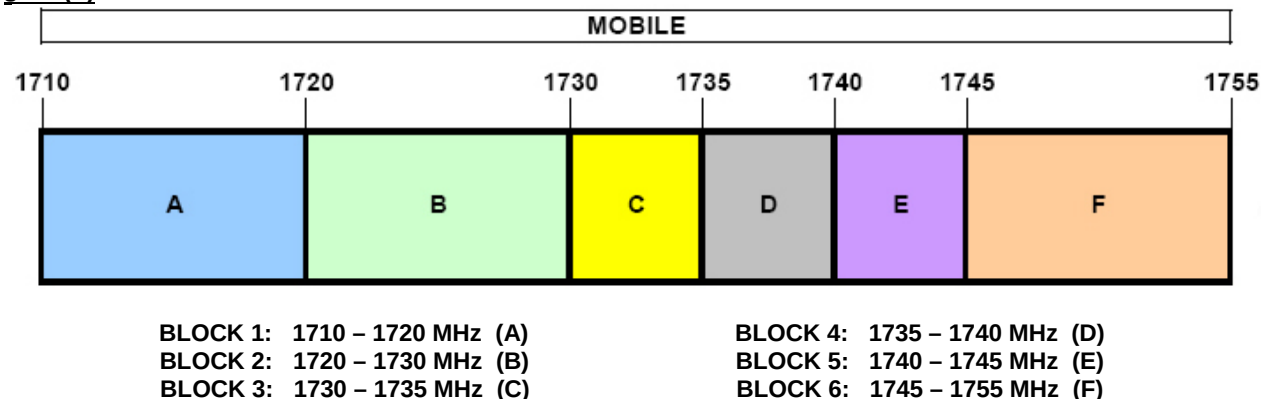
3.5 AWS - Base Frequency Blocks

§27.5(h)



3.6 AWS - Mobile Frequency Blocks

§27.5(h)



3.7 Radiated Power and Radiated Spurious Emissions

§2.1053, §24.232(c), 24.238(a), §27.53(h), RSS-132(4.5.1.2), RSS-133 (6.5.1)

Radiated power and radiated spurious emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This level is then measured with a broadband average power meter. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive average power meter reading. This spurious level is recorded with the power meter. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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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
-	LTx1	Licensed Transmitter Cable Set	1/25/2012	Annual	1/25/2013	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
-	LTx2	Licensed Transmitter Cable Set	2/17/2012	Annual	2/17/2013	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	1937A03348
Agilent	E4432B	ESG-D Series Signal Generator	3/15/2012	Annual	3/15/2013	US40053896
Anritsu	MA2411B	Power Sensor	3/5/2012	Annual	3/5/2013	846215
Anritsu	ML2495A	Power Meter	10/13/2011	Annual	10/13/2012	1039008
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Annual	7/22/2012	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/1/2010	Biennial	10/1/2012	128337
Mini-Circuits	VHF-3100+	High Pass Filter	1/15/2012	Annual	1/15/2013	30841
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A		N/A	100976
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	7/9/2011	Annual	7/9/2012	100071
Rohde & Schwarz	ESU26	EMI Test Receiver	12/15/2011	Annual	12/15/2012	100342
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

Table 4-1. Test Equipment

Note:

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.

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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 receive power meter 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 power meter. 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).

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6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSCHR820
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)						
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.2
27.50(d)(4)	RSS-139	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 6.2
2.1053, 27.53(h), 24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Undesirable Emissions	< 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 6.4, 6.5

Table 6-1. Summary of Test Results

FCC ID: A3LSCHR820		FCC Pt. 24-27 LTE MEASUREMENT REPORT (Class II Permissive Change)		Reviewed by: Quality Manager
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6.2 Equivalent Isotropic Radiated Power Output Data

§27.50(d)(4), §24.232(c)

	Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery
Band IV LTE	1710.70	1.4	QPSK	1/0	-20.14	10.92	8.47	H	19.39	0.087	Standard
	1732.50	1.4	QPSK	1/0	-20.68	10.38	8.54	H	18.92	0.078	Standard
	1754.30	1.4	QPSK	1/0	-19.28	11.78	8.60	H	20.38	0.109	Standard
	1710.70	1.4	16-QAM	1/0	-20.97	10.09	8.47	H	18.56	0.072	Standard
	1732.50	1.4	16-QAM	1/0	-20.34	10.72	8.54	H	19.26	0.084	Standard
	1754.30	1.4	16-QAM	1/0	-21.11	9.95	8.60	H	18.55	0.072	Standard
	1711.50	3.0	QPSK	1/14	-19.52	11.54	8.47	H	20.01	0.100	Standard
	1732.50	3.0	QPSK	1/14	-19.79	11.27	8.54	H	19.81	0.096	Standard
	1753.50	3.0	QPSK	1/14	-19.16	11.90	8.60	H	20.50	0.112	Standard
	1711.50	3.0	16-QAM	1/14	-20.41	10.65	8.47	H	19.12	0.082	Standard
	1732.50	3.0	16-QAM	1/14	-20.64	10.42	8.54	H	18.96	0.079	Standard
	1753.50	3.0	16-QAM	1/14	-20.21	10.85	8.60	H	19.45	0.088	Standard
	1712.50	5.0	QPSK	1/24	-19.11	11.95	8.47	H	20.42	0.110	Standard
	1732.50	5.0	QPSK	1/0	-20.07	10.99	8.54	H	19.53	0.090	Standard
	1752.50	5.0	QPSK	1/24	-19.38	11.68	8.60	H	20.28	0.107	Standard
	1712.50	5.0	16-QAM	1/24	-20.07	10.99	8.47	H	19.46	0.088	Standard
	1732.50	5.0	16-QAM	1/0	-20.94	10.12	8.54	H	18.66	0.073	Standard
	1752.50	5.0	16-QAM	1/24	-20.31	10.75	8.60	H	19.35	0.086	Standard

Table 6-2. Equivalent Isotropic Radiated Power Output Data (Band 4)

	Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery
Band II LTE	1850.70	1.4	QPSK	1/0	-19.39	13.68	8.47	H	22.15	0.164	Standard
	1880.00	1.4	QPSK	1/0	-20.59	12.48	8.54	H	21.02	0.127	Standard
	1909.30	1.4	QPSK	1/0	-20.84	12.23	8.60	H	20.83	0.121	Standard
	1850.70	1.4	16-QAM	1/0	-19.79	13.28	8.47	H	21.75	0.150	Standard
	1880.00	1.4	16-QAM	1/0	-21.86	11.21	8.54	H	19.75	0.094	Standard
	1909.30	1.4	16-QAM	1/0	-21.76	11.31	8.60	H	19.91	0.098	Standard
	1851.50	3.0	QPSK	15/0	-19.34	13.73	8.47	H	22.20	0.166	Standard
	1880.00	3.0	QPSK	15/0	-21.45	11.62	8.54	H	20.16	0.104	Standard
	1908.50	3.0	QPSK	15/0	-21.66	11.41	8.60	H	20.01	0.100	Standard
	1851.50	3.0	16-QAM	15/0	-20.30	12.77	8.47	H	21.24	0.133	Standard
	1880.00	3.0	16-QAM	15/0	-22.39	10.68	8.54	H	19.22	0.084	Standard
	1908.50	3.0	16-QAM	15/0	-22.49	10.58	8.60	H	19.18	0.083	Standard
	1852.50	5.0	QPSK	25/0	-19.86	13.21	8.47	H	21.68	0.147	Standard
	1880.00	5.0	QPSK	25/0	-21.63	11.44	8.54	H	19.98	0.100	Standard
	1907.50	5.0	QPSK	25/0	-20.73	12.34	8.60	H	20.94	0.124	Standard
	1852.50	5.0	16-QAM	25/0	-20.74	12.33	8.47	H	20.80	0.120	Standard
	1880.00	5.0	16-QAM	25/0	-22.38	10.69	8.54	H	19.23	0.084	Standard
	1907.50	5.0	16-QAM	25/0	-21.64	11.43	8.60	H	20.03	0.101	Standard

Table 6-3. Equivalent Isotropic Radiated Power Output Data (Band 2)

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This level is recorded using the power meter. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

The procedure from KDB 971167, section 4.0 was followed in order to obtain the measured levels above.

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6.3 Band 4 Radiated Measurements

§2.1053, §27.50(d)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1711.50 MHz
 CHANNEL: 19965
 MEASURED OUTPUT POWER: 20.01 dBm = 0.100 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 33.01$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3423.00	-41.20	8.10	-33.09	H	53.1
5134.50	-47.35	10.21	-37.14	H	57.1
6846.00	-38.00	11.32	-26.68	H	46.7
8557.50	-53.01	13.02	-39.99	H	60.0
10269.00	-90.18	13.02	-77.16	H	97.2

Table 6-4. Radiated Spurious Data (Ch. 19965)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 14) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup. Final results were obtained using calibrated cables, couplers, and attenuators.

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Band 4 Radiated Measurements

§2.1053, §27.50(d)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 19.81 dBm = 0.096 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 32.81$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-48.71	8.26	-40.44	H	60.3
5197.50	-42.98	10.26	-32.73	H	52.5
6930.00	-35.96	11.42	-24.54	H	44.4
8662.50	-54.81	13.07	-41.75	H	61.6
10395.00	-90.37	13.12	-77.26	H	97.1

Table 6-5. Radiated Spurious Data (Ch. 20175)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 14) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

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Band 4 Radiated Measurements

§2.1053, §27.50(d)(4)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1753.50 MHz
 CHANNEL: 20385
 MEASURED OUTPUT POWER: 20.50 dBm = 0.112 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 33.50$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3507.00	-46.95	8.40	-38.55	H	59.0
5260.50	-46.50	10.31	-36.19	H	56.7
7014.00	-40.30	11.51	-28.79	H	49.3
8767.50	-52.12	13.11	-39.02	H	59.5
10521.00	-90.43	13.20	-77.23	H	97.7

Table 6-6. Radiated Spurious Data (Ch. 20385)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 14) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

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6.4 Band 2 Radiated Measurements

§2.1053, §24.232(c)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1851.50 MHz
 CHANNEL: 18615
 MEASURED OUTPUT POWER: 22.20 dBm = 0.166 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.20 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3703.00	-37.70	8.40	-29.30	H	51.5
5554.50	-35.56	10.62	-24.94	H	47.1
7406.00	-36.97	11.82	-25.15	H	47.4
9257.50	-50.24	13.30	-36.94	H	59.1
11109.00	-89.92	13.50	-76.42	H	98.6

Table 6-7. Radiated Spurious Data (Ch. 18615)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 0) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

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Band 2 Radiated Measurements

§2.1053, §24.232(c)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 20.16 dBm = 0.104 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 33.16$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-37.14	8.42	-28.72	H	48.9
5640.00	-43.89	10.66	-33.24	H	53.4
7520.00	-41.22	11.92	-29.30	H	49.5
9400.00	-48.96	13.24	-35.72	H	55.9
11280.00	-89.56	13.49	-76.07	H	96.2

Table 6-8. Radiated Spurious Data (Ch. 18900)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 14) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

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Band 2 Radiated Measurements

§2.1053, §24.232(c)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1908.50 MHz
 CHANNEL: 19185
 MEASURED OUTPUT POWER: 20.01 dBm = 0.100 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 33.01$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3817.00	-38.38	8.57	-29.81	H	49.8
5725.50	-38.80	10.69	-28.11	H	48.1
7634.00	-34.66	12.07	-22.59	H	42.6
9542.50	-49.17	13.20	-35.97	H	56.0
11451.00	-89.12	13.42	-75.70	H	95.7

Table 6-9. Radiated Spurious Data (Ch. 19185)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported in Band 4 using 3.0MHz Bandwidth and in Band 2 using 3.0MHz Bandwidth. The worst case emissions employed 1RB (with offset 14) and QPSK modulation for this channel. This unit was tested with its standard battery. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontal setup. The data reported in the table above was measured in this test setup.

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7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSCHR820** complies with all the requirements of Parts 2, 24 and 27 of the FCC rules for LTE operation only.

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