



PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA

Tel. 410.290.6652 / Fax 410.290.6554

<http://www.pctestlab.com>



MEASUREMENT REPORT FCC Part 24 GSM

Applicant Name:

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

Date of Testing:

March 20 - April 17, 2012

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Test Report Serial No.:

0Y1203280362.A3L

FCC ID: A3LSHVE170L

APPLICANT: SAMSUNG ELECTRONICS, CO. LTD.

Application Type: Certification

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

FCC Rule Part(s): §2; §24(E)

EUT Type: Portable Handset

Model(s): SHV-E170L

Tx Frequency Range: 1850.20 - 1909.80MHz (PCS GSM)

Max. RF Output Power: 0.7 W EIRP PCS GSM (28.45 dBm)

Emission Designator(s): 245KGXW (PCS GSM)

Test Device Serial No.: identical prototype [S/N: FJ-063-A]

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.

Grant Conditions: Power output listed is EIRP for Part 24.

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


Randy Ortanez
President

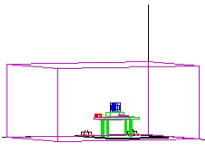


FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 1 of 24

TABLE OF CONTENTS

FCC PART 24 MEASUREMENT REPORT	3
1.0 INTRODUCTION	4
1.1 SCOPE	4
1.2 TESTING FACILITY	4
2.0 PRODUCT INFORMATION.....	5
2.1 EQUIPMENT DESCRIPTION	5
2.2 EMI SUPPRESSION DEVICE(S)/MODIFICATIONS	5
2.3 EUT CAPABILITIES.....	5
2.4 TEST CONFIGURATION.....	5
2.5 LABELING REQUIREMENTS.....	5
3.0 DESCRIPTION OF TESTS	6
3.1 EVALUATION PROCEDURE	6
3.2 OCCUPIED BANDWIDTH EMISSION LIMITS	6
3.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.....	6
3.4 PCS - BASE FREQUENCY BLOCKS	7
3.5 PCS - MOBILE FREQUENCY BLOCKS	7
3.6 PEAK-AVERAGE RATIO	7
3.7 RADIATED SPURIOUS AND HARMONIC EMISSIONS	8
3.8 FREQUENCY STABILITY / TEMPERATURE VARIATION	9
4.0 TEST EQUIPMENT CALIBRATION DATA	10
5.0 SAMPLE CALCULATIONS	11
6.0 TEST RESULTS.....	12
6.1 SUMMARY.....	12
6.2 EQUIVALENT ISOTROPIC RADIATED POWER DATA.....	13
6.3 PCS GSM RADIATED MEASUREMENTS	14
6.4 PCS GSM FREQUENCY STABILITY MEASUREMENTS	17
7.0 PLOTS OF EMISSIONS.....	19
8.0 CONCLUSION.....	24

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 2 of 24



MEASUREMENT REPORT

FCC Part 24

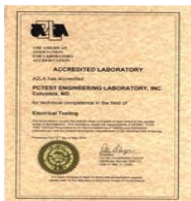


§2.1033 General Information

APPLICANT: Samsung Electronics, Co. Ltd.
APPLICANT ADDRESS: 416 Maetan 3-Dong, Yeongtong-gu
 Suwon-si, Gyeonggi-do
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §24(E)
BASE MODEL: SHV-E170L
FCC ID: A3LSHVE170L
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
EMISSION DESIGNATOR(S): 245KGXW (PCS GSM)
MODE: GSM
FREQUENCY TOLERANCE: $\pm 0.00025\%$ (2.5 ppm)
Test Device Serial No.: FJ-063-A ☐ Production ☒ Pre-Production ☐ Engineering
DATE(S) OF TEST: March 20 - April 17, 2012
TEST REPORT S/N: 0Y1203280362.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.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 3 of 24

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 27, 2006.

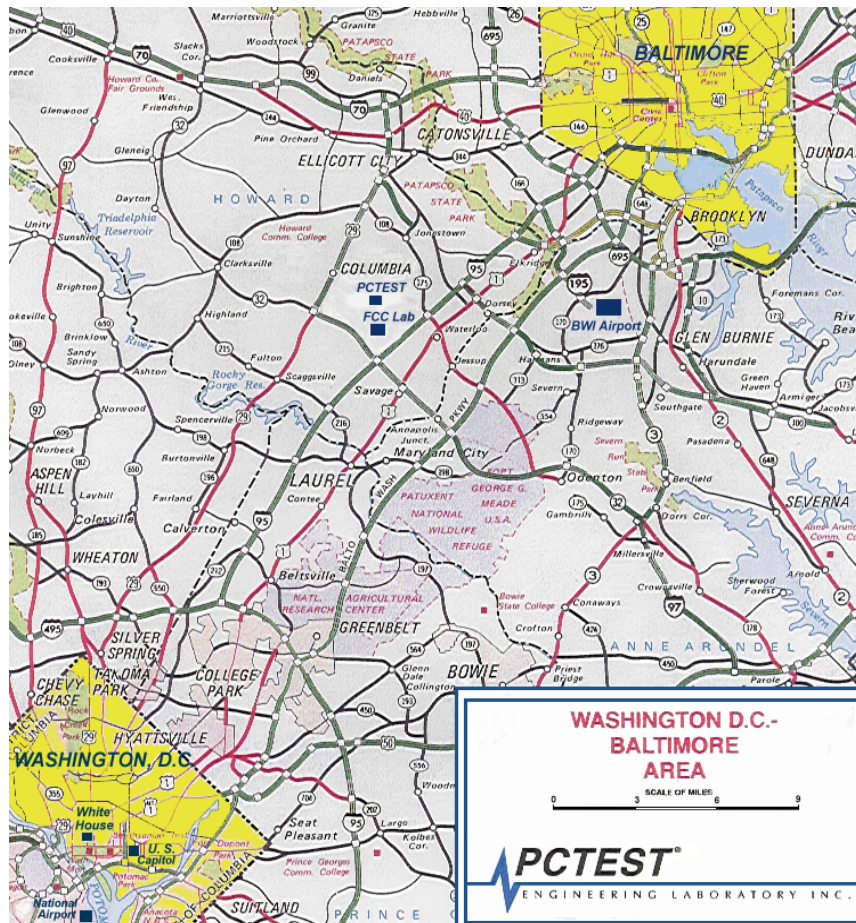


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 4 of 24

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSHVE170L**.

2.2 EMI Suppression Device(s)/Modifications

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

2.3 EUT Capabilities

1900 GSM/GPRS, 802.11a/b/g/n WLAN, 802.11a/n UNII, Bluetooth (1x,EDR), NFC

2.4 Test Configuration

The Samsung Portable Handset FCC ID: A3LSHVE170L was tested per the guidance of ANSI/TIA-603-C-2004. See Section 3.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.5 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.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 5 of 24

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the document titled "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-C-2004) was used in the measurement of the measurement of the Samsung Portable Handset FCC ID: A3LSHVE170L.

Deviation from Measurement Procedure.....None

3.2 Occupied Bandwidth Emission Limits

§2.1049, 24.238(a)

The spectrum analyzer's occupied bandwidth feature was utilized to automatically measure the occupied bandwidth. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

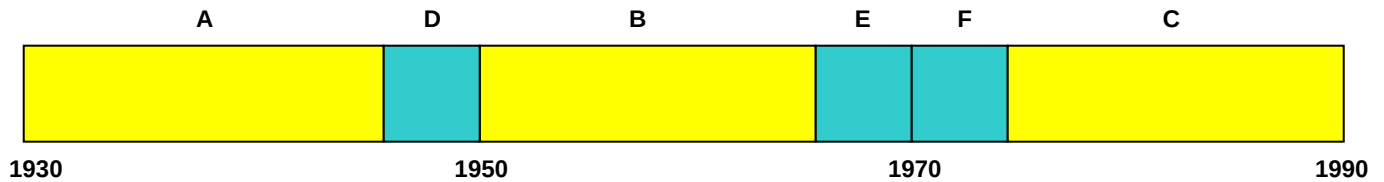
3.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, 24.238(a); RSS-133 (6.5.1)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. 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. 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.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 6 of 24

3.4 PCS - Base Frequency Blocks



BLOCK 1: 1930 – 1945 MHz (A)

BLOCK 4: 1965 – 1970 MHz (E)

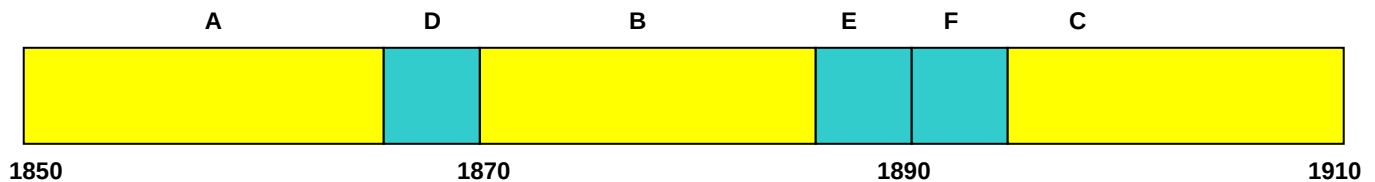
BLOCK 2: 1945 – 1950 MHz (D)

BLOCK 5: 1970 – 1975 MHz (F)

BLOCK 3: 1950 – 1965 MHz (B)

BLOCK 6: 1975 – 1990 MHz (C)

3.5 PCS - Mobile Frequency Blocks



BLOCK 1: 1850 – 1865 MHz (A)

BLOCK 4: 1885 – 1890 MHz (E)

BLOCK 2: 1865 – 1870 MHz (D)

BLOCK 5: 1890 – 1895 MHz (F)

BLOCK 3: 1870 – 1885 MHz (B)

BLOCK 6: 1895 – 1910 MHz (C)

3.6 Peak-Average Ratio

§24.232(d)

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzer's Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 7 of 24

3.7 Radiated Spurious and Harmonic Emissions

§2.1053, 24.238(a); RSS-133 (6.5.1(i))

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment. 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 spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. 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. Emissions are also investigated with the receive antenna horizontally and vertically polarized. The level of the maximized emission is recorded with the spectrum analyzer using a peak detector with RBW = 1MHz, VBW = 3MHz for emissions greater than 1GHz. For emissions below 1GHz, the spectrum analyzer is set to RBW = 100kHz and VBW = 300kHz.

A half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g \text{ [dBm]} - \text{cable loss [dB]}$.

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 $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$ specified in 22.917(a) and 24.238(a).

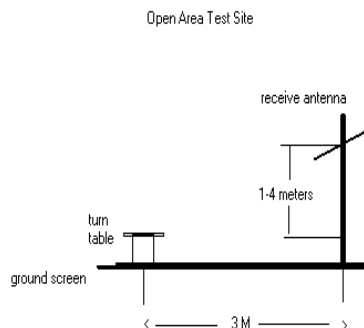


Figure 3-1. Diagram of 3-meter outdoor test range

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 8 of 24

3.8 Frequency Stability / Temperature Variation

§2.1055, 24.235; RSS-133 (6.3)

The frequency stability of the transmitter is measured by:

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

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Time Period and Procedure:

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

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 9 of 24

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)	6/7/2011	Annual	6/7/2012	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	4/17/2011	Annual	4/17/2012	1937A03348
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	2/15/2012	Annual	2/15/2013	3008A00985
Agilent	E4432B	ESG-D Series Signal Generator	3/15/2012	Annual	3/15/2013	US40053896
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	2/15/2012	Annual	2/15/2013	US42510244
Agilent	N9020A	MXA Signal Analyzer	10/10/2011	Annual	10/10/2012	US46470561
Espec	ESX-2CA	Environmental Chamber	4/21/2011	Annual	4/21/2012	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Annual	7/22/2012	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/31/2011	Annual	5/31/2012	135427
Mini-Circuits	VHF-3100+	High Pass Filter	2/7/2012	Annual	2/7/2013	31144
Rohde & Schwarz	CMU200	Base Station Simulator	6/1/2011	Annual	6/1/2012	833855/0010
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100071
Rohde & Schwarz	RS-PR26	18-26.5 GHz Pre-Amplifier	6/9/2011	Annual	6/9/2012	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	4/27/2011	Annual	4/27/2012	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

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 10 of 24

5.0 SAMPLE CALCULATIONS

Emission Designator

Emission Designator = 250KGXW

GSM BW = 250 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

Spurious Radiated Emission - PCS Band

Example: Channel 512 PCS Mode 2nd Harmonic (3700.40 MHz)

The average receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the power meter reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm - (-24.80) = 50.3 dBc.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 11 of 24

6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics, Co. Ltd.
 FCC ID: A3LSHVE170L
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): GSM

FCC Part Section(s)	RSS Section	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)						
2.1049, 24.238(a)	N/A	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 24.238(a)	RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	$< 43 + \log_{10}(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions		PASS	Section 7.0
24.232(d)	N/A	Peak-Average Ratio	$< 13 \text{ dB}$		PASS	Section 7.0
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power	$< 2 \text{ Watts max. EIRP}$	RADIATED	PASS	Section 6.2
2.1053, 24.238(a)	RSS-133 (6.5.1)	Undesirable Emissions	$< 43 + \log_{10}(P[\text{Watts}])$ for all out-of-band emissions		PASS	Section 6.3
2.1055, 24.235	RSS-133 (6.3)	Frequency Stability	Fundamental stays within authorized frequency block.		PASS	Section 6.4

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.
- 2) The analyzer plots shown in Section 7.0 were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset	Page 12 of 24	

6.2 Equivalent Isotropic Radiated Power Data

§24.232(c); RSS-133 (6.4) [SRSP-510 (5.1.2)]

Freq [MHz]	Mode	Battery Type	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GSM1900	Standard	18.95	8.00	H	26.95	0.495	33.01	-6.060
1880.00	GSM1900	Standard	20.25	8.00	H	28.25	0.668	33.01	-4.760
1909.80	GSM1900	Standard	20.45	8.00	H	28.45	0.700	33.01	-4.560

Table 6-2. Equivalent Isotropic Radiated Power Output Data

NOTES:

1. This device was tested in all configurations and the highest power is reported in GSM mode with a PCL of "0".
2. This unit was tested with its standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 13 of 24

6.3 PCS GSM Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1850.20 MHz
 CHANNEL: 512
 MEASURED OUTPUT POWER: 26.950 dBm = 0.495 W
 MODULATION SIGNAL: GSM (Internal)
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 39.95 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-52.45	8.40	-44.05	H	71.0
5550.60	-54.88	10.62	-44.26	H	71.2
7400.80	-56.95	11.82	-45.13	H	72.1
9251.00	-59.42	13.30	-46.12	H	73.1
11101.20	-54.22	13.50	-40.72	H	67.7

Table 6-3. Radiated Spurious Data (PCS GSM Mode – Ch. 512)

NOTES:

1. This device was tested in all configurations and the highest power is reported in GSM mode with a PCL of "0".
2. This unit was tested with its standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 14 of 24

PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 661
 MEASURED OUTPUT POWER: 28.250 dBm = 0.668 W
 MODULATION SIGNAL: GSM (Internal)
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 41.25 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-53.10	8.42	-44.68	H	72.9
5640.00	-53.66	10.66	-43.01	H	71.3
7520.00	-55.87	11.92	-43.95	H	72.2
9400.00	-59.01	13.24	-45.77	H	74.0
11280.00	-54.77	13.49	-41.29	H	69.5

Table 6-4. Radiated Spurious Data (PCS GSM Mode – Ch. 661)

NOTES:

1. This device was tested in all configurations and the highest power is reported in GSM mode with a PCL of "0".
2. This unit was tested with its standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 15 of 24

PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1909.80 MHz
 CHANNEL: 810
 MEASURED OUTPUT POWER: 28.450 dBm = 0.700 W
 MODULATION SIGNAL: GSM (Internal)
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 41.45 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-50.62	8.57	-42.05	H	70.5
5729.40	-55.16	10.69	-44.46	H	72.9
7639.20	-56.23	12.07	-44.16	H	72.6
9549.00	-58.75	13.20	-45.55	H	74.0
11458.80	-54.88	13.42	-41.46	H	69.9

Table 6-5. Radiated Spurious Data (PCS GSM Mode – Ch. 810)

NOTES:

1. This device was tested in all configurations and the highest power is reported in GSM mode with a PCL of "0".
2. This unit was tested with its standard battery.
3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case test configuration was found in the horizontally flat setup. The data reported in the table above was measured in this test setup.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 16 of 24

6.4 PCS GSM Frequency Stability Measurements

§2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 661

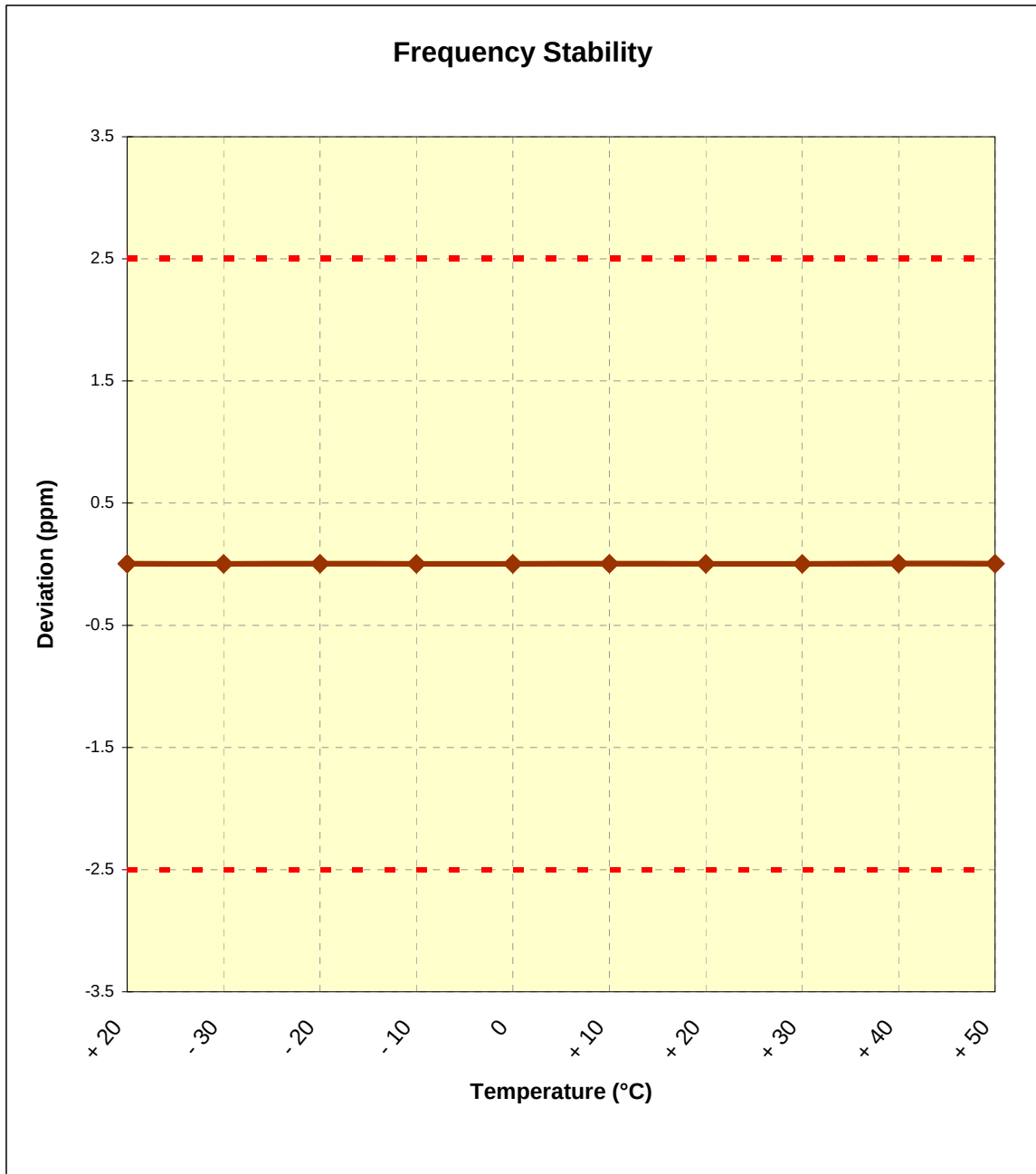
REFERENCE VOLTAGE: 3.8 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,880,000,007	7	0.0000004
100 %		- 30	1,880,000,004	4	0.0000002
100 %		- 20	1,880,000,007	7	0.0000004
100 %		- 10	1,880,000,004	4	0.0000002
100 %		0	1,880,000,006	6	0.0000003
100 %		+ 10	1,880,000,008	8	0.0000004
100 %		+ 20	1,880,000,005	5	0.0000003
100 %		+ 30	1,880,000,004	4	0.0000002
100 %		+ 40	1,880,000,010	10	0.0000005
100 %		+ 50	1,880,000,008	8	0.0000004
115 %		+ 20	1,880,000,003	3	0.0000002
BATT. ENDPOINT	3.40	+ 20	1,880,000,005	5	0.0000003

Table 6-6. Frequency Stability Data (PCS GSM Mode – Ch. 661)

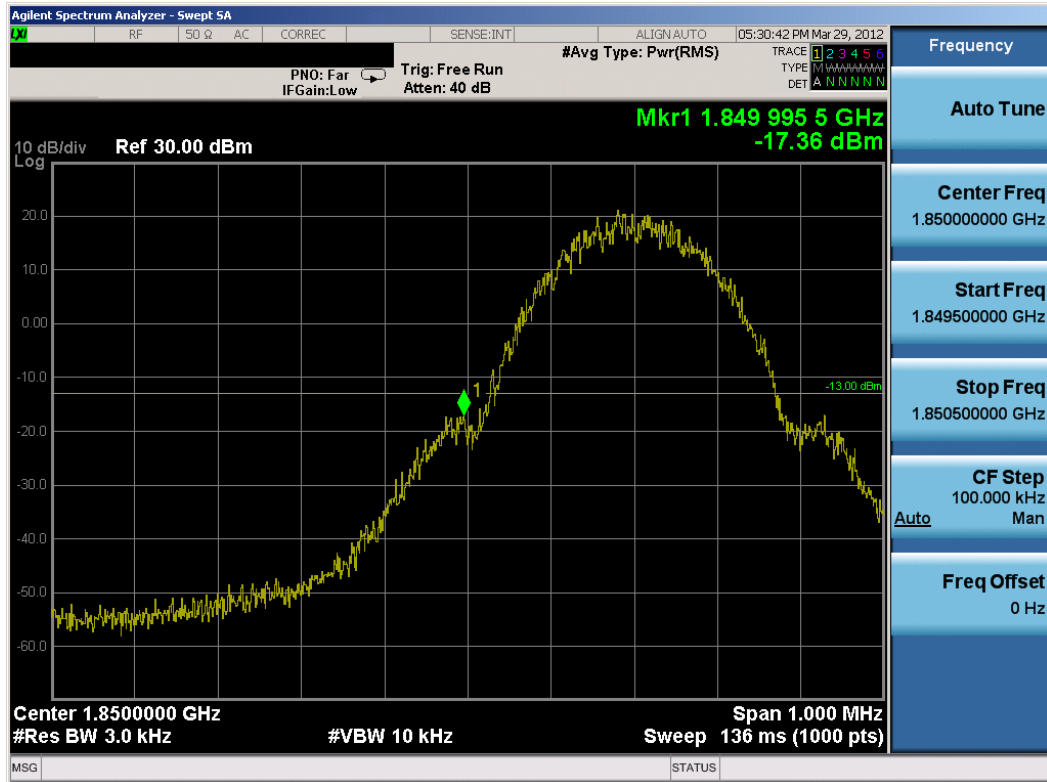
Note: The frequency stability is sufficient to ensure that the fundamental emission stays within the authorized frequency block.

PCS GSM Frequency Stability Measurements (Cont'd)
§2.1055, 24.235; RSS-133 (6.3)

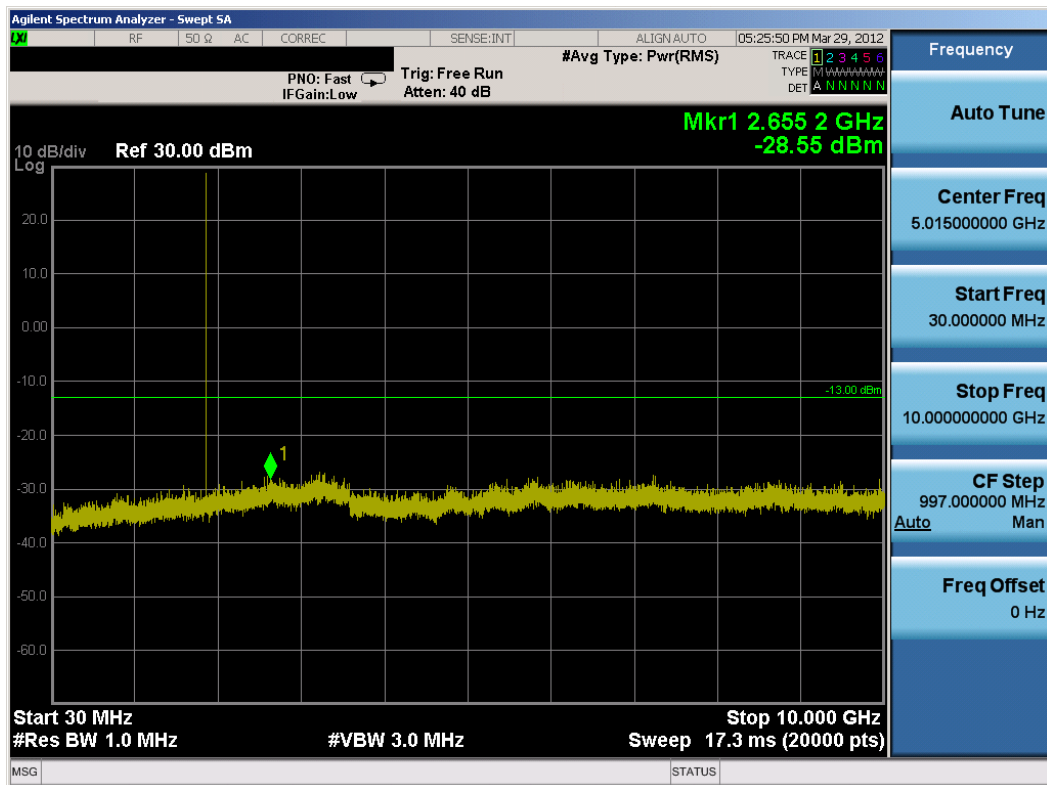


Plot 6-1. Frequency Stability Graph (PCS GSM Mode – Ch. 661)

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 18 of 24

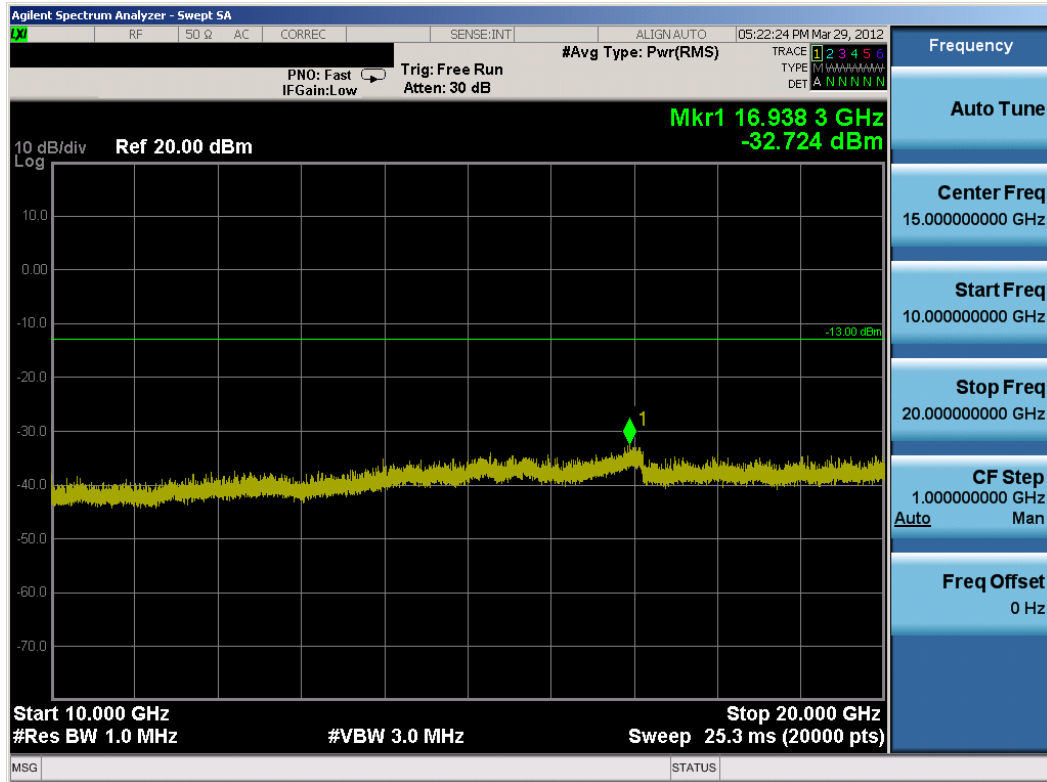


Plot 7-3. Band Edge Plot (PCS GSM Mode – Ch. 512)

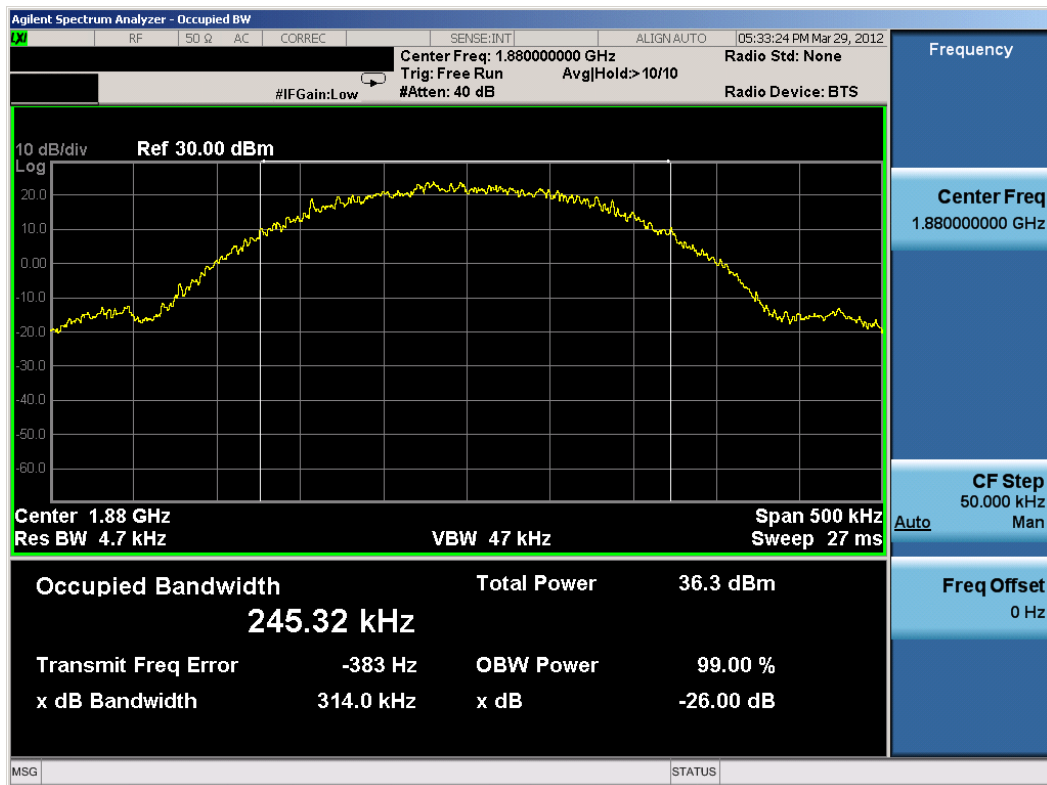


Plot 7-4. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 20 of 24

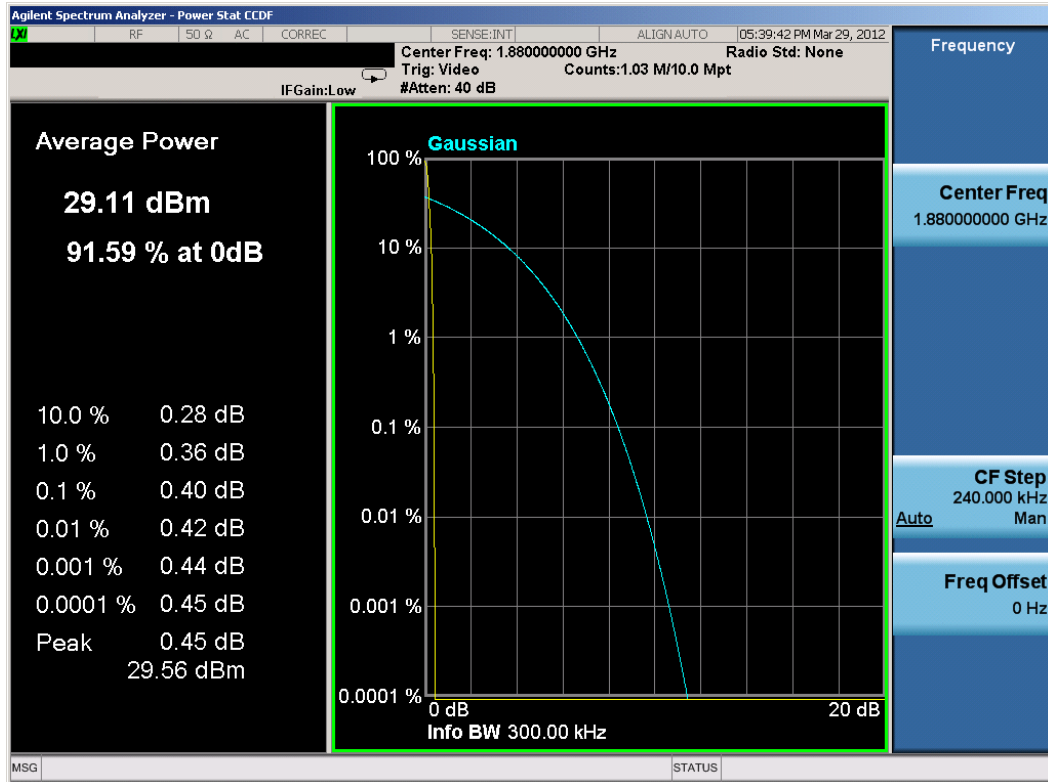


Plot 7-5. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

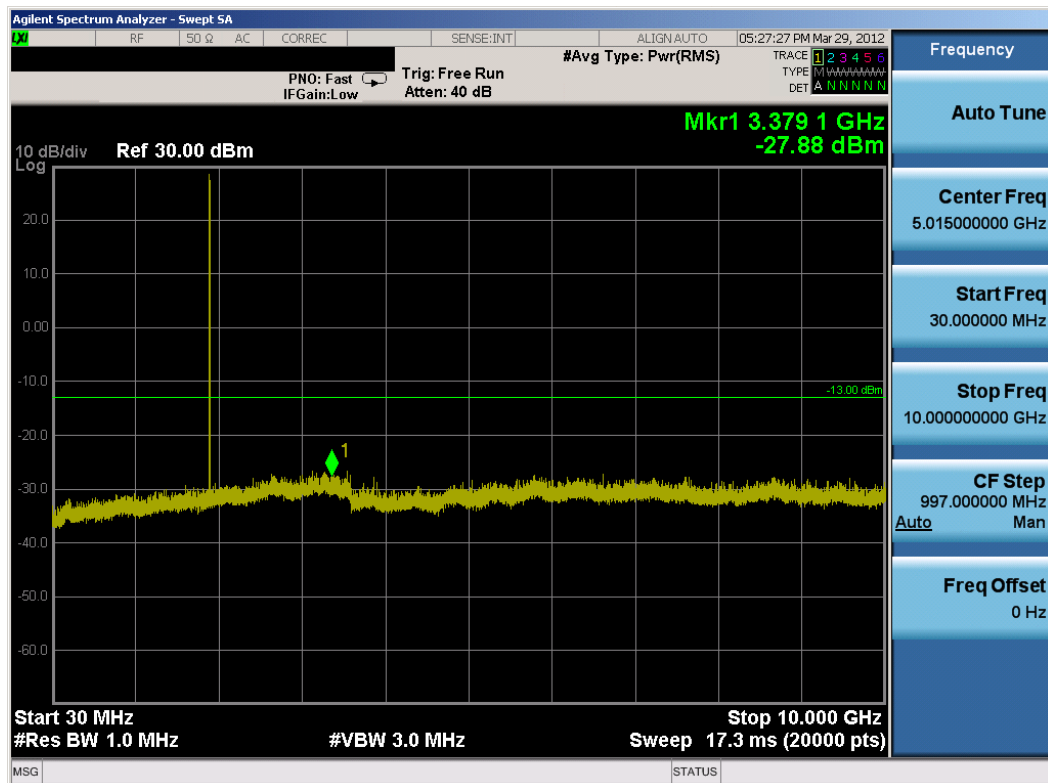


Plot 7-6. Occupied Bandwidth Plot (PCS GSM Mode – Ch. 661)

FCC ID: A3LSHVE170L	 FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset	Page 21 of 24

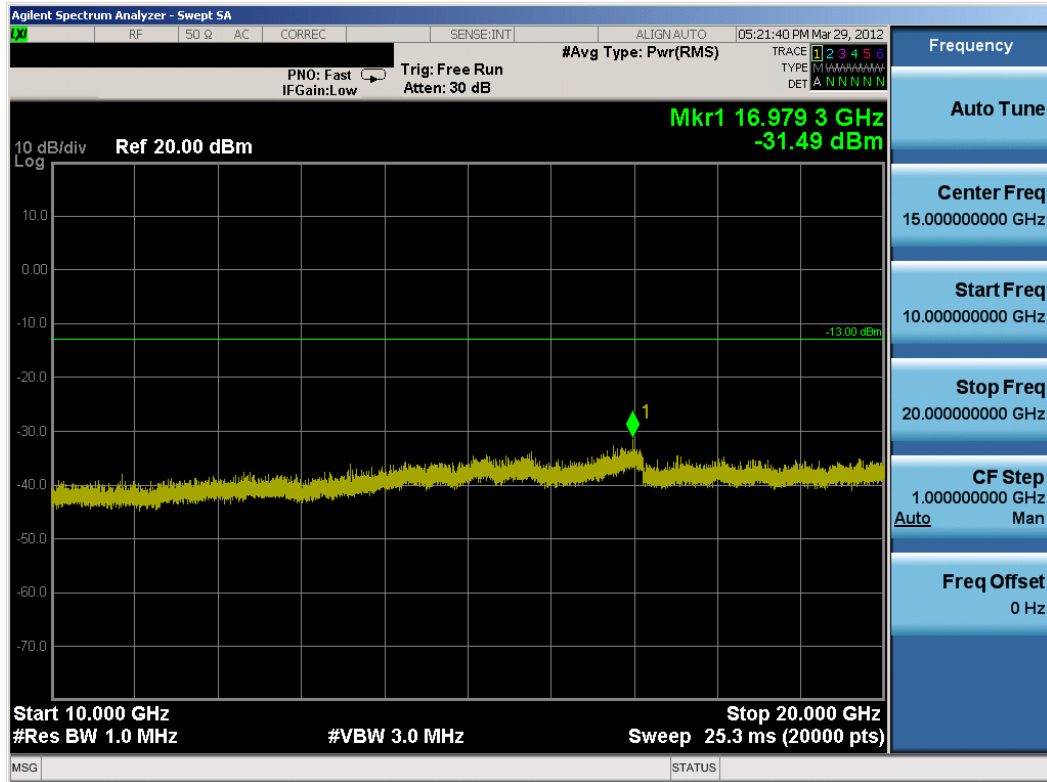


Plot 7-7. Peak-Average Ratio Plot (PCS GSM Mode – Ch. 661)

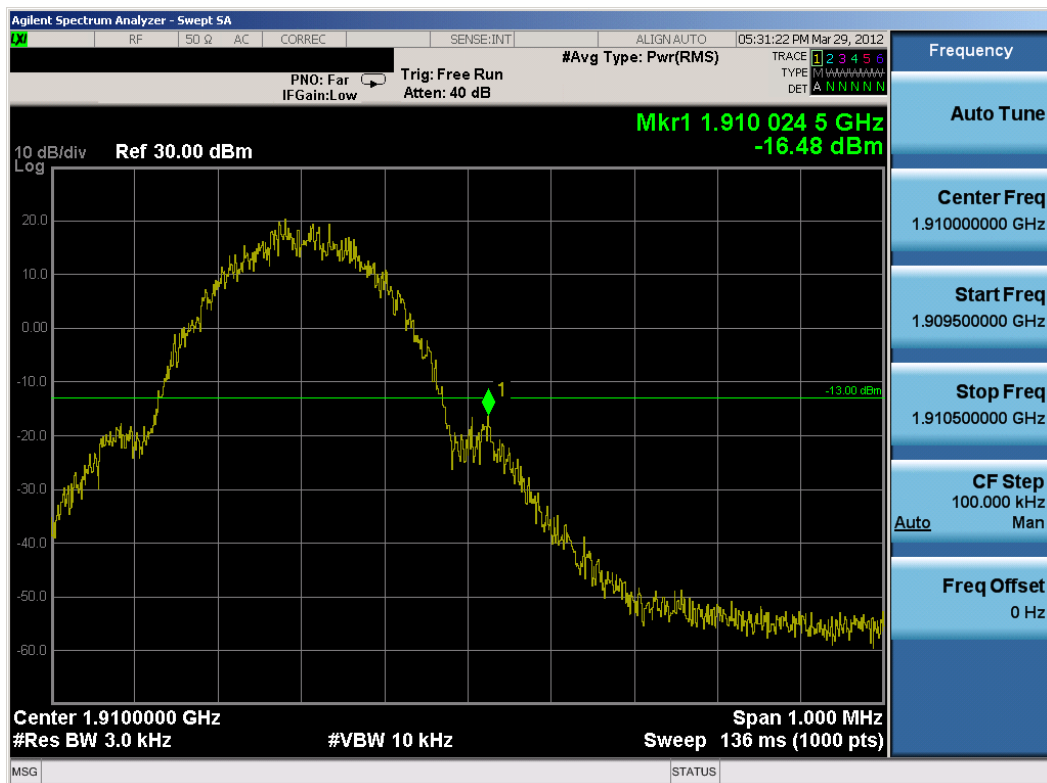


Plot 7-8. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 22 of 24



Plot 7-9. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)



Plot 7-10. Band Edge Plot (PCS GSM Mode – Ch. 810)

FCC ID: A3LSHVE170L	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 23 of 24

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSHVE170L** complies with all the requirements of Parts 2 and 24 of the FCC rules.

FCC ID: A3LSHVE170L		FCC Pt. 24 GSM MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1203280362.A3L	Test Dates: March 20 - April 17, 2012	EUT Type: Portable Handset		Page 24 of 24