



FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E

CERTIFICATION TEST REPORT

FOR
GSM Phone + Bluetooth & DTS b/g/n

MODEL NUMBER: SM-G110H

FCC ID: A3LSMG110H

REPORT NUMBER: 14I17930-1 REVISION A

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Prepared for

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM Phone + Bluetooth & DTS b/g/n
MODEL: SM-G110H
SERIAL NUMBER: R31F502SPJP (radiated); R31F502SPJE (conducted)
DATE TESTED: May 28 – June 9, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E	PASS

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☒ Chamber D
☐ Chamber B	☐ Chamber E
☒ Chamber C	☐ Chamber F

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM Phone + Bluetooth & WLAN 2.4GHz b/g/n

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted and radiated ERP / EIRP output powers as follows:

FCC Part 22/2 4/27						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			Peak(dBm)	Peak(mW)	Peak(dBm)	Peak(mW)
GSM850	824~849	GMSK	31.8	1513.56		
	824~849	GPRS	32.4	1737.80	31.07	1278.5
GSM1900	1850~1910	GMSK	29.5	891.25		
	1850~1910	GPRS	29.5	891.25	29.46	883.08

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow

Frequency (MHz)	Peak Gain (dBi)
GSM850, 824~849MHz	-2.44
GSM1900, 1850~1910MHz	1.79

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	ETA3U30EBE	N/A	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF Out	1	Spectrum Analyzer	Shielded	None	NA
2	Antenna Port	1	EUT	Shielded	0.1m	NA
3	RF In/Out	1	Communication Test Set	Shielded	1m	NA

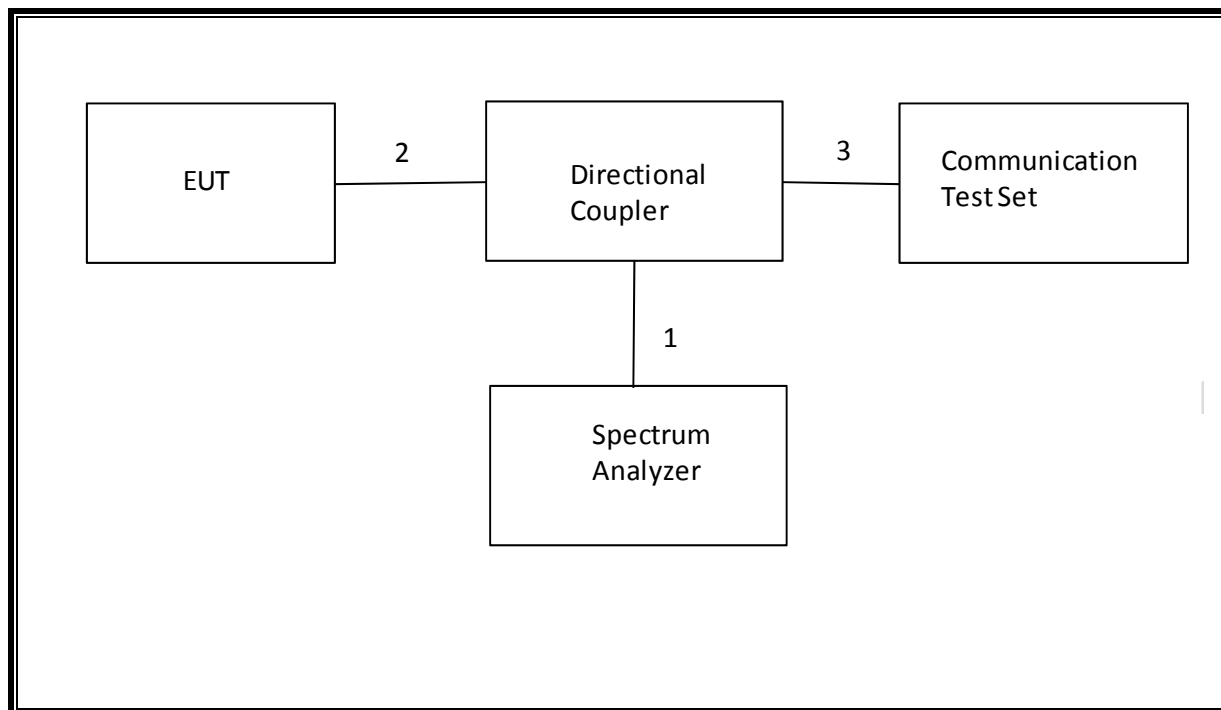
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	USB	1	AC Adapter	Un-shielded	1.2m	No
2	Jack	1	Headset	Shielded	1m	No
3	RF In/out	1	Communication Test Set	Un-shielded	2m	Yes

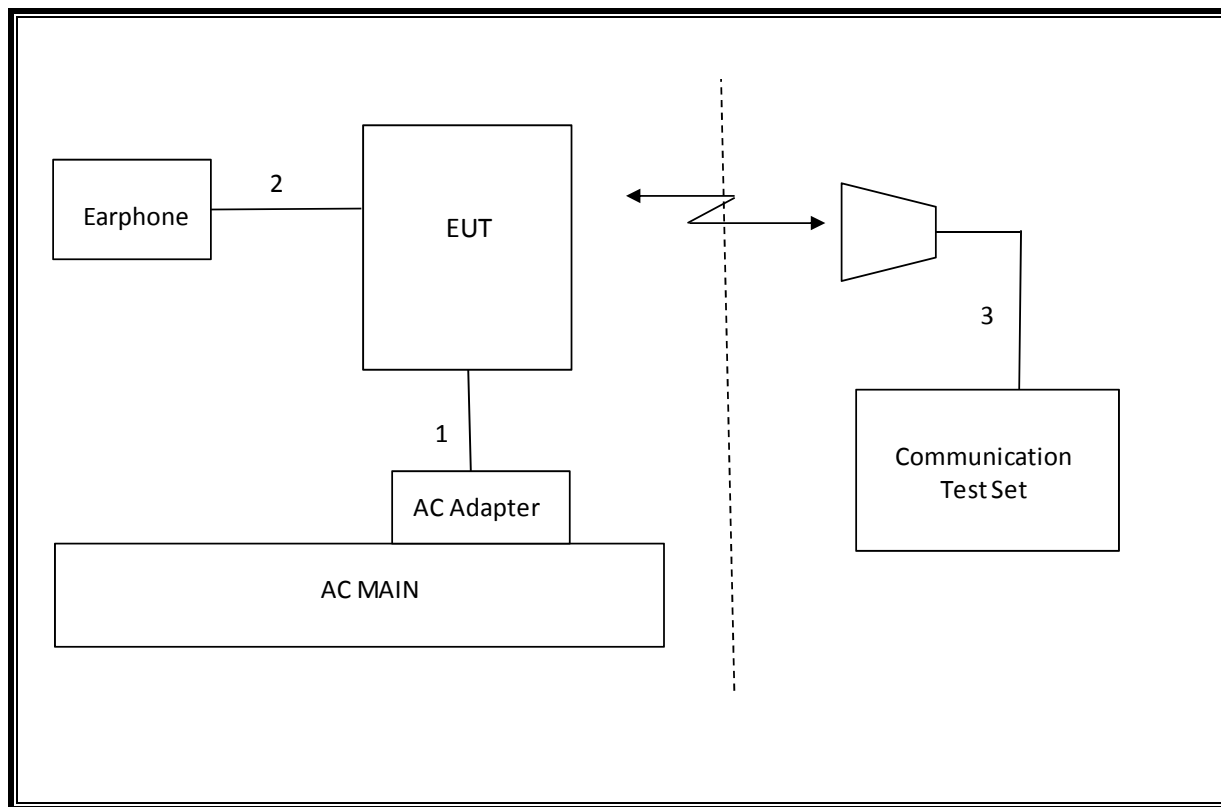
TEST SETUP

The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	08/14/14
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/14
Antenna, Horn, 18 GHz	EMCO	3115	C00784	09/25/14
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	01/09/15
Communications Test Set	R&S	CMW500	T159	07/02/14
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/14
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/14/15
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	256.1 kHz
22.917(a) 24.238(a) 27.53(g) 90.691	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-20.229 dBm
2.1046	N/A	Conducted output power	N/A		Pass	32.4 dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.0043 PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	31.07 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	29.46 dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-29.1 dBm

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900
Press Connection control to choose the different menus
Press RESET > choose all to reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM+GPRS or GSM+EGPRS
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting
 > Slot configuration > Uplink/Gamma
 > 33 dBm for GPRS 850/900
 > 30 dBm for GPRS1800/1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stable)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0> 4 dB
Slot Config > Unchanged (if already set under MS Signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3 (Default)
Network Coding Scheme > CS4 (GPRS) and MCS5 ~ MCS9 (EGPRS)
 Bit Stream > 2E9-1PSR Bit Pattern
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal On to turn on the signal and change settings

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)	Frame Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	31.7	22.7
			190	836.6	31.7	22.7
			251	848.8	31.8	22.7
GPRS (GMSK)	CS1	1	128	824.2	32.2	23.2
			190	836.6	32.2	23.2
			251	848.8	32.4	23.3
		2	128	824.2	30.0	24.7
			190	836.6	30.0	24.7
			251	848.8	30.0	24.7
		3	128	824.2	28.5	24.4
			190	836.6	28.5	24.4
			251	848.8	28.5	24.3
		4	128	824.2	26.5	23.5
			190	836.6	26.5	23.6
			251	848.8	26.4	23.4
Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)	Frame Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	29.4	20.4
			661	1880.0	29.5	20.5
			810	1909.8	29.4	20.4
GPRS (GMSK)	CS1	1	512	1850.2	29.4	20.4
			661	1880.0	29.5	20.5
			810	1909.8	29.4	20.4
		2	512	1850.2	28.0	22.0
			661	1880.0	28.2	22.2
			810	1909.8	28.0	22.0
		3	512	1850.2	25.8	21.5
			661	1880.0	26.1	21.8
			810	1909.8	25.8	21.5
		4	512	1850.2	23.6	20.6
			661	1880.0	24.0	21.0
			810	1909.8	23.8	20.8

9. LIMITS AND CONDUCTED RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

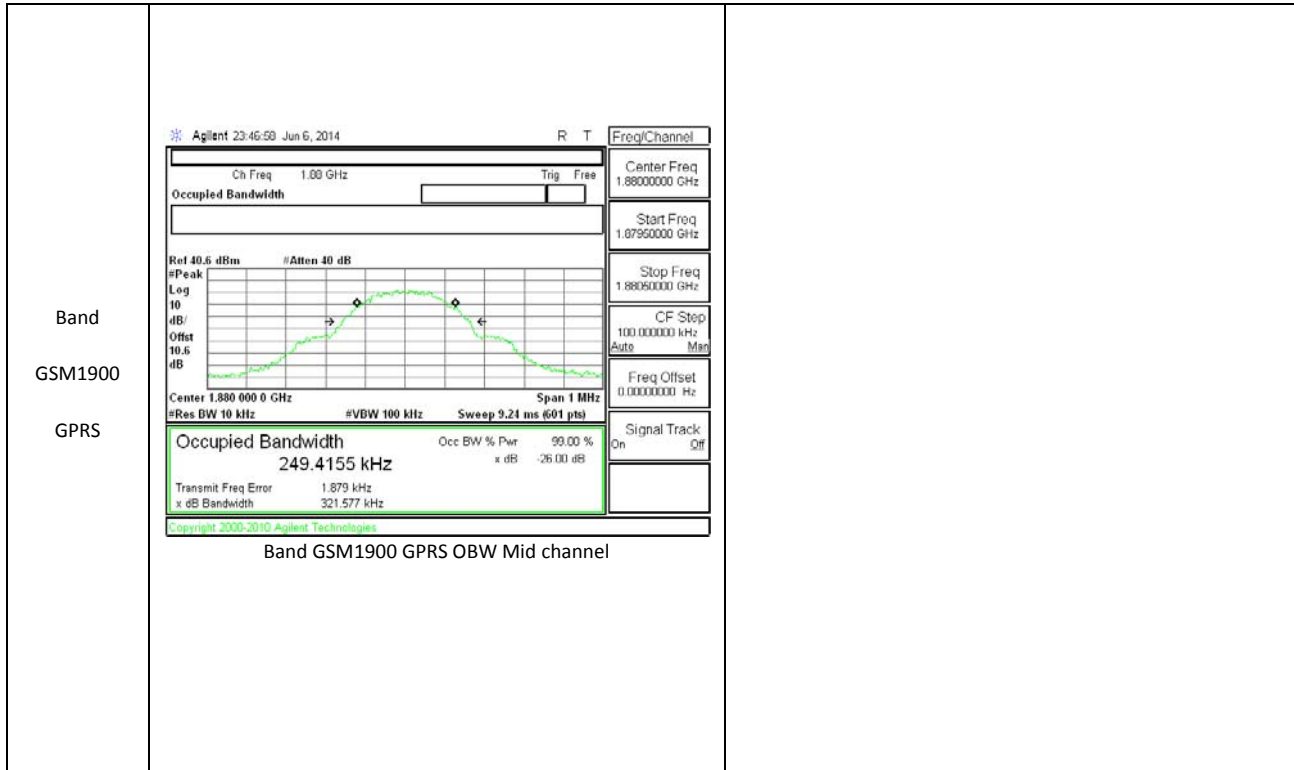
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

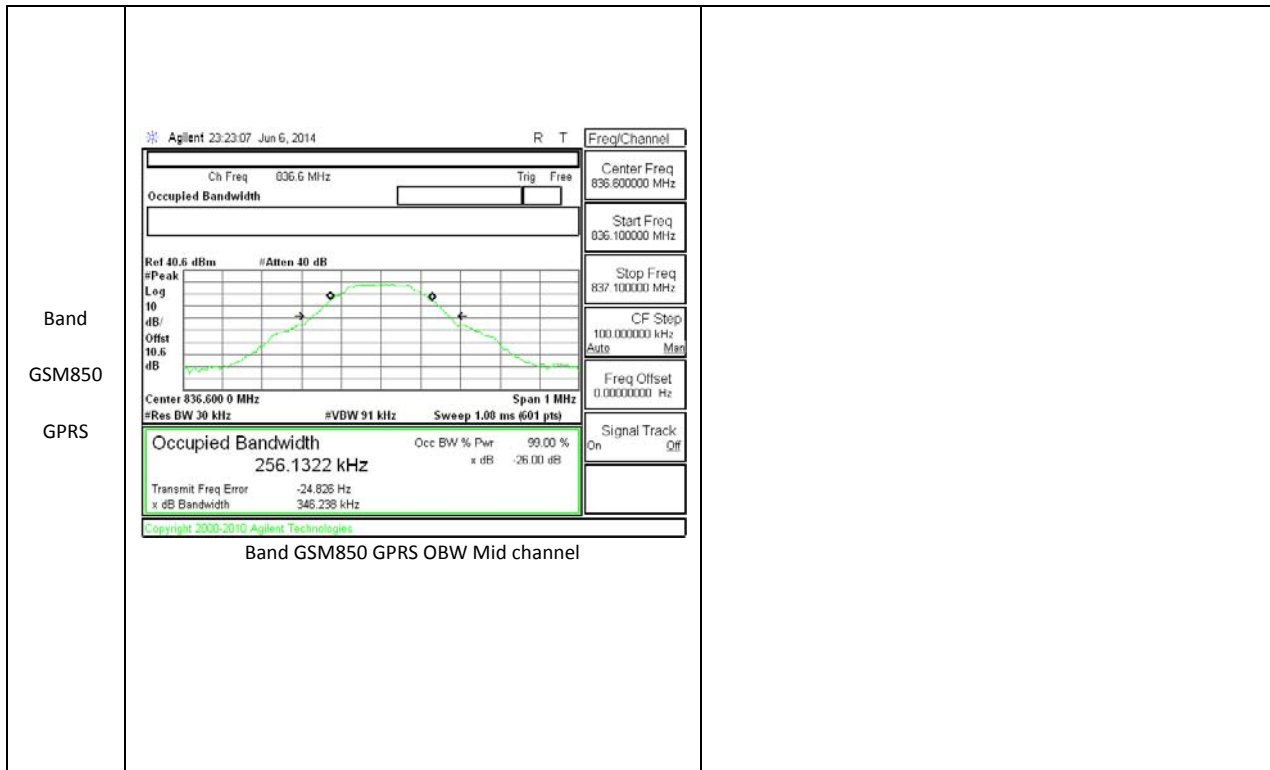
(KDB 971168 D01 Power Meas License Digital Systems v02r01 - 06/07/2013)

9.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GMSK	128	824.2		
		190	836.6		
		251	848.8		
	GPRS	128	824.2	253.2	338.9
		190	836.6	256.1	346.2
		251	848.8	252.2	337.4
GSM1900	GMSK	512	1850.2		
		661	1880		
		810	1909.8		
	GPRS	512	1850.2	252.9	337.4
		661	1880	249.4	321.6
		810	1909.8	251.4	338.7

9.1.2. OCCUPIED BANDWIDTH PLOTS





9.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238 and § 90.691

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

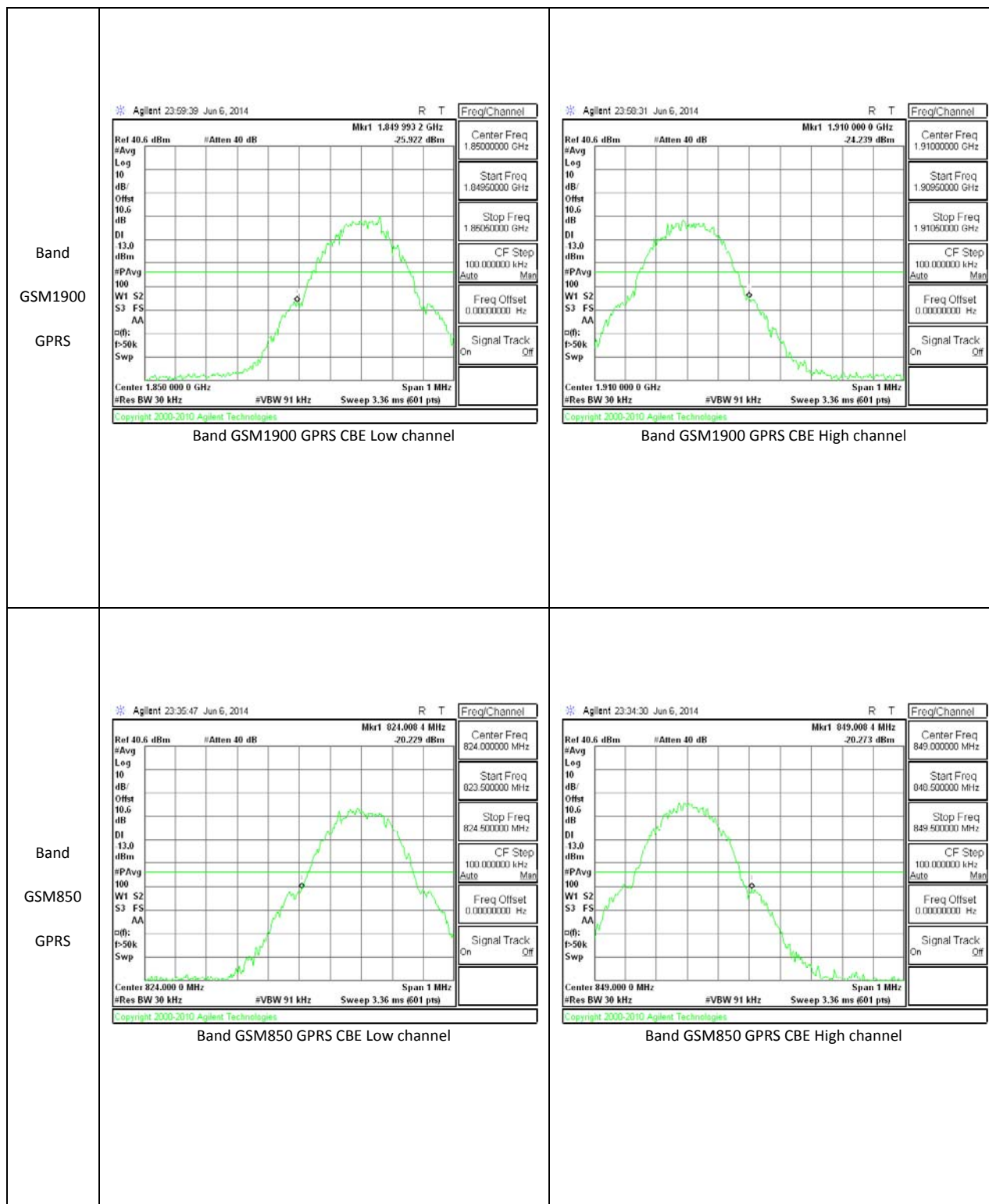
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

MODES TESTED

GSM850/1900

RESULTS

9.2.1.BAND EDGE PLOTS



9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §90.691

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

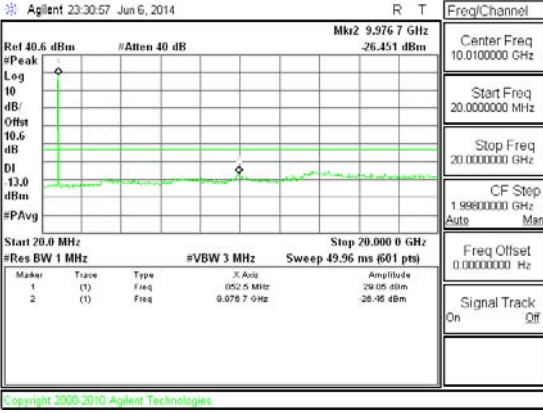
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

RESULTS

9.3.1. OUT OF BAND EMISSIONS RESULT

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GMSK	824.2			
		836.6			
		848.8			
	GPRS	824.2	-26	-13	-13
		836.6	-26.45	-13	-13.45
		848.8	-25.42	-13	-12.42
GSM1900	GMSK	1850.2			
		1880			
		1909.8			
	GPRS	1850.2	-25.14	-13	-12.14
		1880	-25.59	-13	-12.59
		1909.8	-24.79	-13	-11.79

9.3.2. OUT OF BAND EMISSIONS PLOTS

Band GSM1900 GPRS	 Band GSM1900 GPRS CSE Mid channel	
Band GSM850 GPRS	 Band GSM850 GPRS CSE Mid channel	

9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, and §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

MODES TESTED

GSM850/1900

RESULTS

See the following pages.

9.4.1. FREQUENCY STABILITY RESULTS

CELL, GPRS MODULATION – MID CHANNEL

Reference Frequency: Cellular Mid Channel 836.599985MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	836.599986	-0.001	2.5
3.70	40	836.599982	0.004	2.5
3.70	30	836.599979	0.007	2.5
3.70	20	836.599985	0	2.5
3.70	10	836.599987	-0.002	2.5
3.70	0	836.599989	-0.005	2.5
3.70	-10	836.599988	-0.004	2.5
3.70	-20	836.599986	-0.001	2.5
3.70	-30	836.599985	0.000	2.5

Reference Frequency: Cellular Mid Channel 836.599985MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	20	836.599985	0	2.5
4.20	20	836.599979	0.007	2.5
3.30	20	836.599988	-0.004	2.5

PCS, GPRS MODULATION – MID CHANNEL

Reference Frequency: PCS Mid Channel 1880.000036MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1879.999977	0.002	2.5
3.70	40	1879.999974	0.003	2.5
3.70	30	1879.999982	-0.001	2.5
3.70	20	1879.999980	0	2.5
3.70	10	1879.999979	0.001	2.5
3.70	0	1879.999979	0.001	2.5
3.70	-10	1879.999984	-0.002	2.5
3.70	-20	1879.999981	-0.001	2.5
3.70	-30	1879.999978	0.001	2.5

Reference Frequency: PCS Mid Channel 1880.000036MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	20	1879.999980	0.00000	2.5
4.20	20	1879.999978	0.00106	2.5
3.30	20	1879.999972	0.00426	2.5

10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, and § 90.635.

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

MODES TESTED

GSM850/1900

TEST RESULTS

10.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GMSK	512	1850.2		
		661	1880		
		810	1909.8		
	GPRS	512	1850.2	29.27	845.28
		661	1880	29.46	883.08
		810	1909.8	29.44	879.02
Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GMSK	128	824.2		
		190	836.6		
		251	848.8		
	GPRS	128	824.2	31.067	1278.5
		190	836.6	30.883	1225.46
		251	848.8	30.731	1183.31

10.1.2. ERP/EIRP DATA

Band GSM1900 GPRS	High Frequency Fundamental Measurement Compliance Certification Services Chamber C								
	Company: Samsung Project #: 14I17930 Date: 06/09/14 Test Engineer: D. Soper Configuration: EUT ONLY, X Position Mode: GPRS 1900MHz								
	Test Equipment: Receiving: T119, and Chamber C SMA Cables Substitution: Horn T59 Substitution, 2ft SMA Cable								
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1.850	21.6	V	0.85	7.89	28.68	33.0	-4.3	
	1.850	22.2	H	0.85	7.89	29.27	33.0	-3.7	
	Mid Ch								
	1.880	21.6	V	0.85	7.87	28.63	33.0	-4.4	
	1.880	22.4	H	0.85	7.87	29.46	33.0	-3.5	
High Ch									
1.910	19.5	V	0.85	7.88	26.57	33.0	-6.4		
1.910	22.4	H	0.85	7.88	29.44	33.0	-3.6		
Rev. 3.17.11									

Band

GSM850

GPRS

High Frequency Substitution Measurement

Compliance Certification Services Chamber D

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Samsung

14I17930

06/02/14

O. Stoelting

EUT ONLY, X Position

GRPS 850MHz

Test Equipment:

Receiving: Horn T59, and Chamber E SMA Cables

Substitution: Dipole T416, 22ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	23.25	V	0.9	0.0	22.35	38.5	-16.1	
824.20	31.97	H	0.9	0.0	31.07	38.5	-7.4	
Mid Ch								
836.60	23.71	V	0.9	0.0	22.81	38.5	-15.6	
836.60	31.78	H	0.9	0.0	30.88	38.5	-7.6	
High Ch								
848.80	23.65	V	0.9	0.0	22.75	38.5	-15.7	
848.80	31.63	H	0.9	0.0	30.73	38.5	-7.7	

Rev. 3.17.11

10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §90.691

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). 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 emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). 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 emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

GSM850/1900

RESULTS

10.2.1. SPURIOUS RADIATION DATA

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	Samsung									
Project #:	14I17930									
Date:	6/3/2014									
Test Engineer:	O. Stoelting									
Configuration:	X-pos. EUT w/ ac charger & HS									
Mode:	GPRS 1900									
Chamber Pre-amplifier Filter Limit 5m Chamber A T343 8449B Filter 1 Part 24										
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
GSM1900 GPRS	Low Ch, 1850MHz									
	3.700	-17.9	V	3.0	35.4	1.0	-52.3	-13.0	-39.3	
	5.550	-11.6	V	3.0	34.7	1.0	-45.4	-13.0	-32.4	
	7.400	-7.7	V	3.0	34.9	1.0	-41.6	-13.0	-28.6	
	3.700	-6.9	H	3.0	35.4	1.0	-41.3	-13.0	-28.3	
	5.550	-16.3	H	3.0	34.7	1.0	-50.0	-13.0	-37.0	
	7.400	-10.5	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
	Mid Ch, 1880.0MHz									
	3.760	-7.2	V	3.0	35.3	1.0	-41.6	-13.0	-28.6	
	5.640	-18.3	V	3.0	34.7	1.0	-52.0	-13.0	-39.0	
	7.520	-13.6	V	3.0	34.9	1.0	-47.6	-13.0	-34.6	
	3.760	-6.3	H	3.0	35.3	1.0	-40.7	-13.0	-27.7	
	5.640	-20.2	H	3.0	34.7	1.0	-53.9	-13.0	-40.9	
	7.520	-13.6	H	3.0	34.9	1.0	-47.6	-13.0	-34.6	
	High Ch, 1909.8 MHz									
	3.820	-6.8	V	3.0	35.3	1.0	-41.1	-13.0	-28.1	
	5.729	-20.0	V	3.0	34.7	1.0	-53.7	-13.0	-40.7	
	7.639	-19.3	V	3.0	35.0	1.0	-53.2	-13.0	-40.2	
3.820	-11.9	H	3.0	35.3	1.0	-46.1	-13.0	-33.1		
5.729	-18.5	H	3.0	34.7	1.0	-52.3	-13.0	-39.3		
7.639	-18.1	H	3.0	35.0	1.0	-52.1	-13.0	-39.1		
Rev. 03.03.09										

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:	Samsung								
Project #:	14117930								
Date:	06/03/14								
Test Engineer:	O. Stoelting								
Configuration:	X Position EUT, AC Charger, HS								
Mode:	GPRS 850								
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T34 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1.648	-1.6	V	3.0	37.4	1.0	-38.0	-13.0	-25.0	
2.473	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3.297	-22.8	V	3.0	35.8	1.0	-57.6	-13.0	-44.6	
1.648	-4.5	H	3.0	37.4	1.0	-40.9	-13.0	-27.9	
2.473	-23.5	H	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3.297	-20.3	H	3.0	35.8	1.0	-55.1	-13.0	-42.1	
Mid Ch, 836.6MHz									
1.673	-6.2	V	3.0	37.3	1.0	-42.6	-13.0	-29.6	
2.510	-25.6	V	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3.346	-24.6	V	3.0	35.8	1.0	-59.4	-13.0	-46.4	
1.673	0.0	H	3.0	37.3	1.0	-36.3	-13.0	-23.3	
2.510	-19.9	H	3.0	36.4	1.0	-55.3	-13.0	-42.3	
3.346	-22.5	H	3.0	35.8	1.0	-57.2	-13.0	-44.2	
High Ch, 848.8MHz									
1.698	-13.1	V	3.0	37.3	1.0	-49.4	-13.0	-36.4	
2.547	-19.8	V	3.0	36.3	1.0	-55.1	-13.0	-42.1	
3.395	-26.5	V	3.0	35.7	1.0	-61.2	-13.0	-48.2	
1.698	7.2	H	3.0	37.3	1.0	-29.1	-13.0	-16.1	
2.547	-14.2	H	3.0	36.3	1.0	-49.5	-13.0	-36.5	
3.395	-23.8	H	3.0	35.7	1.0	-58.6	-13.0	-45.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									