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

CERTIFICATION TEST REPORT

FOR

GSM PHONE + BLUETOOTH & WLAN 2.4GHZ B/G/N

MODEL NUMBER: GT-I9060/DS

FCC ID: A3LGTI9060

REPORT NUMBER: 13I16373-1

ISSUE DATE: OCTOBER 30, 2013

Prepared for

SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

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Table of Content

1. ATTESTATION OF TEST RESULTS 5
2. TEST METHODOLOGY 6
3. FACILITIES AND ACCREDITATION 6
4. CALIBRATION AND UNCERTAINTY 6
4.1. MEASURING INSTRUMENT CALIBRATION 6
4.2. SAMPLE CALCULATION 6
4.3. MEASUREMENT UNCERTAINTY 6
5. EQUIPMENT UNDER TEST 7
5.1. DESCRIPTION OF EUT 7
5.2. MAXIMUM OUTPUT POWER 7
5.3. DESCRIPTION OF AVAILABLE ANTENNAS 7
5.4. DESCRIPTION OF TEST SETUP 8
6. TEST AND MEASUREMENT EQUIPMENT 11
7. Summary Table 12
8. RF POWER OUTPUT VERIFICATION 13
8.1. GSM/GPRS/EDGE 13
9. LIMITS AND CONDUCTED RESULTS 15
9.1. OCCUPIED BANDWIDTH 15
9.1.1. OCCUPIED BANDWIDTH RESULTS 16
9.1.2. OCCUPIED BANDWIDTH PLOTS 17
9.2. BAND EDGE EMISSIONS 18
9.2.1. BAND EDGE PLOTS 19
9.3. OUT OF BAND EMISSIONS 21
9.3.1. OUT OF BAND EMISSIONS RESULT 22
9.3.2. OUT OF BAND EMISSIONS PLOTS 23
9.4. FREQUENCY STABILITY 24
9.4.1. FREQUENCY STABILITY RESULTS 25
10. RADIATED TEST RESULTS 27
10.1. RADIATED POWER (ERP & EIRP) 27

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10.1.1. ERP/EIRP Results 27
10.1.2. ERP/EIRP PLOTS 28
10.2. FIELD STRENGTH OF SPURIOUS RADIATION 30
10.2.1. SPURIOUS RADIATION PLOTS 32
11. SETUP PHOTOS 34
END OF REPORT 36

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

EUT DESCRIPTION: GSM Phone + Bluetooth & WLAN 2.4GHz b/g/n

MODEL: GT-I9060/DS

SERIAL NUMBER: FK-325-E

DATE TESTED: October 26-29, 2013

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

UL Verification Services Inc. By:

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WiSE PROGRAM MANAGER
UL Verification Services

Tested By:

STEVEN TRAN
WiSE LAB TECHNICIAN
UL Verification Services

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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 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

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:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

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

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	Conducted		Radiated	
		Peak	Peak(mW)	Peak(dBm)	Peak(mW)	Peak(dBm)
GSM850	824~849	GMSK	1667	32.22		
	824~849	GPRS	1671	32.23	518.8	27.15
GSM1900	1850~1910	GMSK	873	29.41		
	1850~1910	GPRS	875	29.42	1079	30.33

All conducted and radiated test base on GPRS mode worst case since GMSK and GPRS using the same modulation method.

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	-3.11
GSM1900, 1850~1910MHz	1.07

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5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	ETAOU10EWE	DW1D913DS/7-E	N/A
Headset	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.

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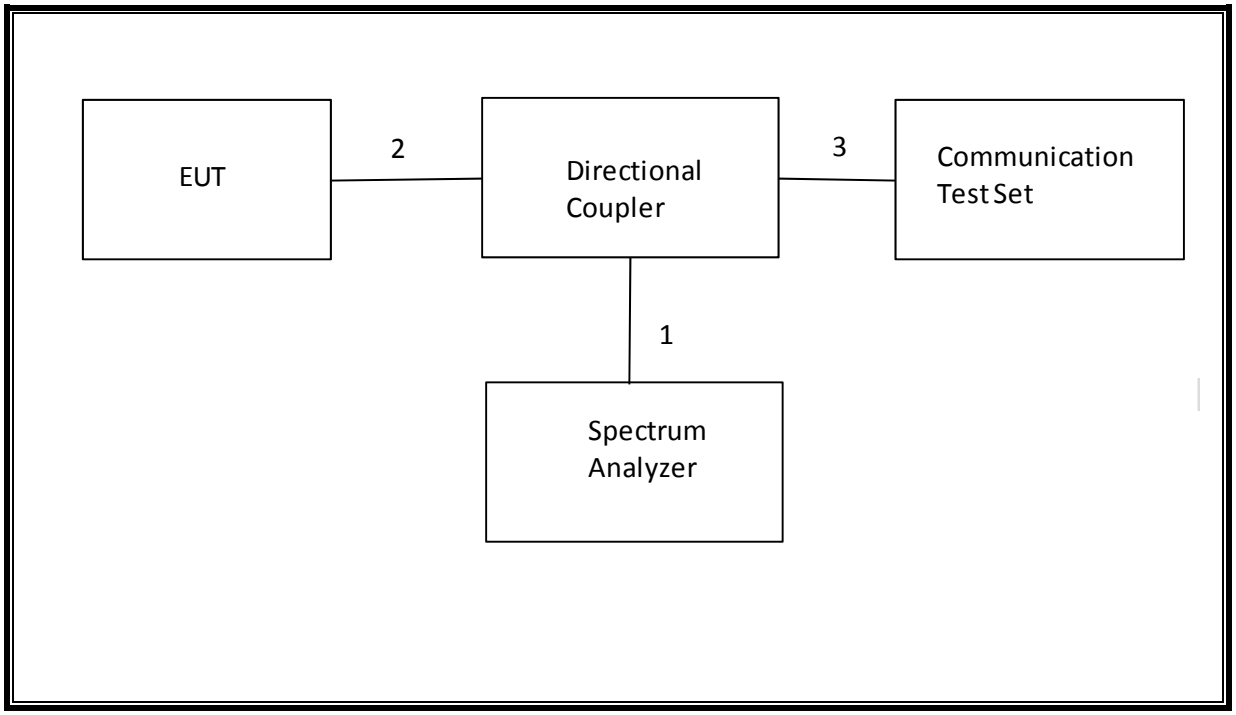
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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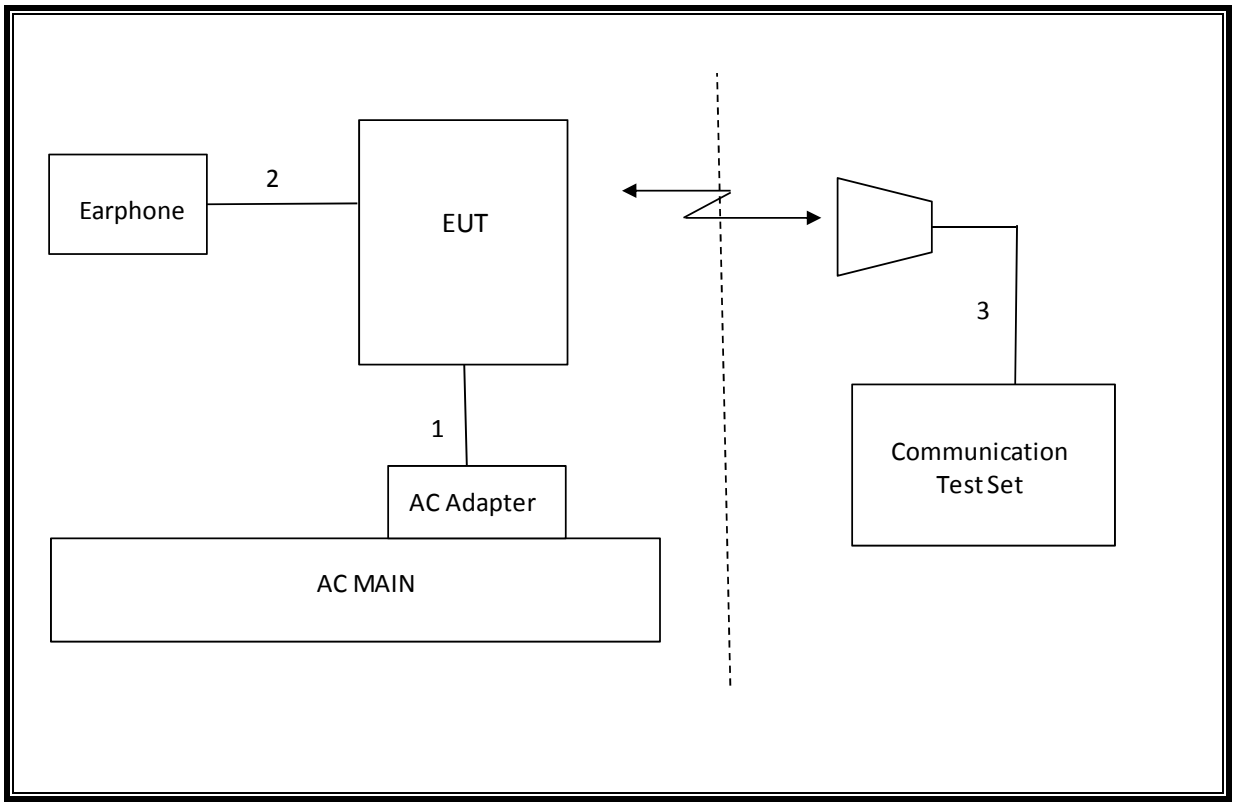
SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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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	02/26/14
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	08/14/14
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/14
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	01/09/14
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	02/14/14
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

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7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case	Note
2.1049	RSS Gen	Occupied Band width (99%)	N/A	Conducted	Pass	248KHz	GSM
22.917(a) 24.238(a)	RSS-132(4.5.1) RSS-133(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-16.35 dBm	GSM
2.1046	N/A	Conducted output power	N/A		Pass	32.23 dBm	GSM
22.355 24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability	2.5PPM		Pass	0.0167 ppm	GSM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	27.15dBm	GSM
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	30.33 dBm	GSM
22.917(a) 24.238(a)	RSS-132(4.5.1) RSS-133(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-27.2 dBm	GSM

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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 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

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Band	Mode	Ch.	f(MHz)	1 time slot	2 time slot	3 time slot	4 time slot
				Peak (dBm)	Peak (dBm)	Peak (dBm)	Peak (dBm)
GSM850	GMSK	128	824.2	32.22			
		190	836.6	32.19			
		251	848.8	32.13			
	GPRS	128	824.2	32.23	29.52	28.51	26.47
		190	836.6	32.19	29.50	28.49	26.47
		251	848.8	32.14	29.47	28.46	26.44

Band	Mode	Ch.	f(MHz)	1 time slot	2 time slot	3 time slot	4 time slot
				Peak (dBm)	Peak (dBm)	Peak (dBm)	Peak (dBm)
GSM1900	GMSK	512	1850.2	29.06			
		661	1880	29.41			
		810	1909.8	29.09			
	GPRS	512	1850.2	29.05	26.49	25.46	23.47
		661	1880	29.42	26.89	25.88	23.94
		810	1909.8	29.08	26.58	25.59	23.70

Note: GRPS used as the worst case to present the conducted test since GRPS power is higher than GMSK. Both GPRS and GMSK using the same modulation type.

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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)

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9.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
GS850	GPRS	128	824.2	0.247	0.318
		190	836.6	0.245	0.312
		251	848.8	0.243	0.317
GSM1900	GPRS	512	1850.2	0.241	0.317
		661	1880	0.245	0.318
		810	1909.8	0.248	0.315

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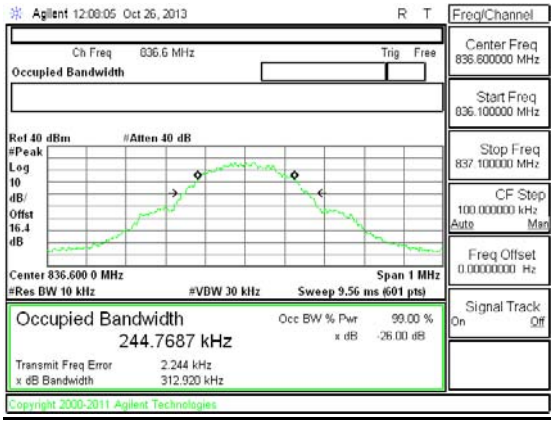
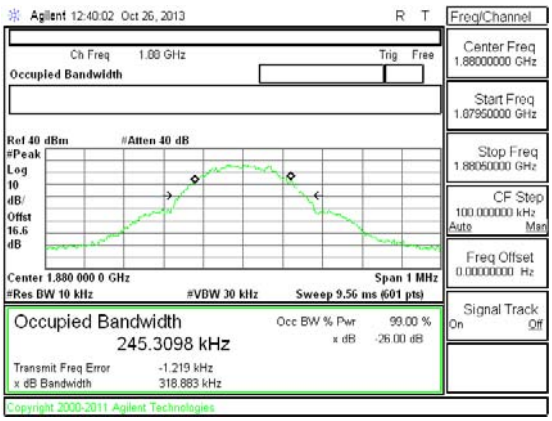
9.1.2. OCCUPIED BANDWIDTH PLOTS



Band GSM850 GPRS OBW Mid channel



Band GSM1900 GPRS OBW Mid channel

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9.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238

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 and GSM1900

RESULTS

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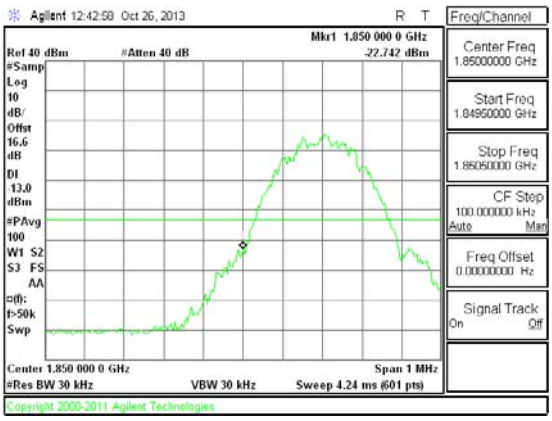
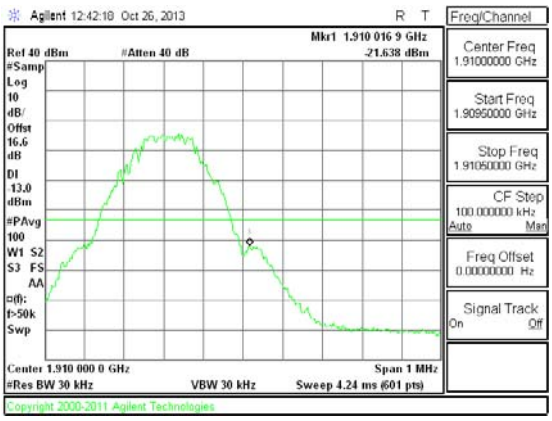
9.2.1. BAND EDGE PLOTS

Band GSM1900 GPRS	 Band GSM1900 GPRS CBE Low channel	 Band GSM1900 GPRS CBE High channel

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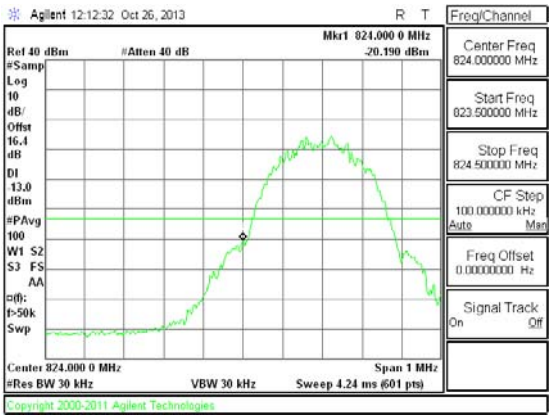
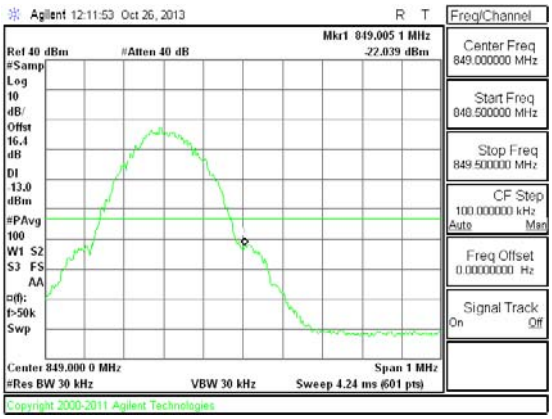
Band GSM850 GPRS	 Band GSM850 GPRS CBE Low channel	 Band GSM850 GPRS CBE High channel

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9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §24.238

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.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

GSM850 and GSM1900

RESULTS

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9.3.1. OUT OF BAND EMISSIONS RESULT

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-17.05	-13	-4.05
		836.6	-16.35	-13	-3.35
		848.8	-17.22	-13	-4.22
GSM1900	GPRS	1850.2	-17.26	-13	-4.26
		1880	-17.03	-13	-4.03
		1909.8	-16.99	-13	-3.99

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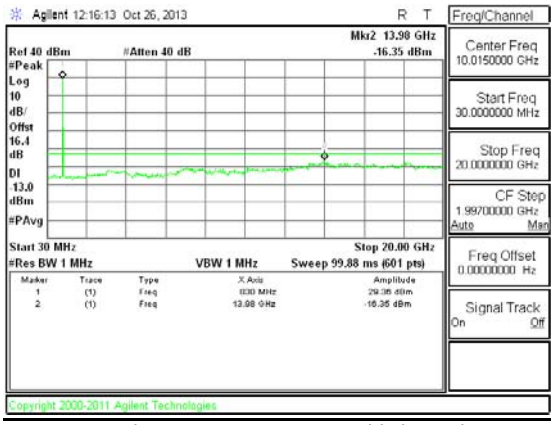
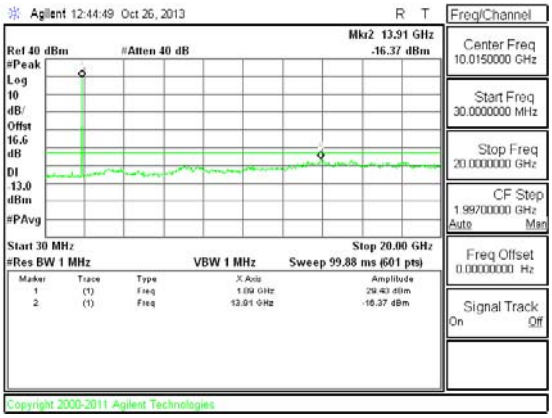
9.3.2. OUT OF BAND EMISSIONS PLOTS



Band GSM850 GPRS CSE Mid channel



Band GSM1900 GPRS CSE Mid channel

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9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235

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.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached. Reference power supply voltage for these tests is 3.7Vdc.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case). The test voltage ranges from 3.30 to 4.20 VDC.

MODES TESTED

GSM850 and GSM1900

RESULTS

See the following pages.

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9.4.1. FREQUENCY STABILITY RESULTS

GSM850, – MID CHANNEL190, Frequency 836.6MHz

Reference Frequency: Cell Mid Channel 836.6 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.600021	0.010	2.5
3.80	40	836.600025	0.005	2.5
3.80	30	836.600031	-0.002	2.5
3.80	***20***	***836.600029***	***0***	***2.5***
3.80	10	836.600026	0.004	2.5
3.80	0	836.600037	-0.010	2.5
3.80	-10	836.600030	-0.001	2.5
3.80	-20	836.600036	-0.008	2.5
3.80	-30	836.600027	0.002	2.5

Reference Frequency: Cell Mid Channel 836.6 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.600029***	***0.00000***	***2.5***
4.20	20	836.600035	*-0.00717*	2.5
3.2	20	836.600015	*0.01673*	2.5

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GSM1900, Channel 661 Freq: 1880MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel 1880MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000062	0.006	2.5
3.80	40	1880.000065	0.004	2.5
3.80	30	1880.000071	0.001	2.5
3.80	***20***	***1880.000073***	***0***	***2.5***
3.80	10	1880.000076	-0.002	2.5
3.80	0	1880.000091	-0.010	2.5
3.80	-10	1880.000088	-0.008	2.5
3.80	-20	1880.000077	-0.002	2.5
3.80	-30	1880.000085	-0.006	2.5

Reference Frequency: PCS Mid Channel 1880 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1880.000073***	***0***	***2.5***
4.20	20	1880.000074	*-0.001*	2.5
3.20	20	1880.000071	*0.001*	2.5

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10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232

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 and GSM1900

TEST RESULTS

10.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	30.33	1078.95
		661	1880	28.23	665.27
		810	1909.8	27.51	563.64

Band	Mode	Channel	f(MHz)	ERP	
				dBm	mW
GSM850	GPRS	128	824.2	26.99	500.03
		190	836.6	27.15	518.80
		251	848.8	25.95	393.55

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10.1.2. ERP/EIRP PLOTS

Band

GSM1900

GPRS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Samsung
Project #: 13I16373
Date: 10/26/13
Test Engineer: R. Alegre
Configuration: EUT, Z pos w/ hs & charger
Mode: GPRS 1900MHz

Test Equipment:
Receiving: T120, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

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	20.0	V	0.85	7.94	27.09	33.0	-5.9	
1.850	22.4	H	0.85	8.80	30.33	33.0	-2.7	
Mid Ch								
1.880	18.6	V	0.85	7.95	25.70	33.0	-7.3	
1.880	20.4	H	0.85	8.68	28.23	33.0	-4.8	
High Ch								
1.910	18.7	V	0.85	7.97	25.77	33.0	-7.2	
1.910	19.8	H	0.85	8.57	27.51	33.0	-5.5	

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Band

GSM850

GPRS

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: SAMSUNG
Project #: 13I16373
Date: 10/26/13
Test Engineer: R.Alegre
Configuration:
Mode: GRPS 850MHz CELL
Average

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.06	27.89	V	0.9	0.0	26.99	38.5	-11.5	
824.06	15.92	H	0.9	0.0	15.02	38.5	-23.4	
Mid Ch								
836.60	28.05	V	0.9	0.0	27.15	38.5	-11.3	
836.60	16.39	H	0.9	0.0	15.49	38.5	-23.0	
High Ch								
848.87	26.85	V	0.9	0.0	25.95	38.5	-12.5	
848.87	17.60	H	0.9	0.0	16.70	38.5	-21.7	

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10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

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

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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 and GSM1900

RESULTS

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10.2.1. SPURIOUS RADIATION PLOTS

Band

GSM1900

GPRS

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 13I16373
Date: 10/28/13
Test Engineer: K.Kedida
Configuration: X Position, AC Charger
Mode: GPRS 1900

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T343 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850MHz									
3.700	-10.1	V	3.0	35.4	1.0	-44.5	-13.0	-31.5	
5.550	0.6	V	3.0	34.7	1.0	-33.1	-13.0	-20.1	
7.400	5.7	V	3.0	34.9	1.0	-28.2	-13.0	-15.2	
9.250	2.2	V	3.0	35.2	1.0	-32.1	-13.0	-19.1	
11.100	2.4	V	3.0	34.8	1.0	-31.5	-13.0	-18.5	
3.700	-9.1	H	3.0	35.4	1.0	-43.5	-13.0	-30.5	
5.550	-2.8	H	3.0	34.7	1.0	-36.5	-13.0	-23.5	
7.400	2.8	H	3.0	34.9	1.0	-31.1	-13.0	-18.1	
9.250	1.8	H	3.0	35.2	1.0	-32.4	-13.0	-19.4	
11.100	1.0	H	3.0	34.8	1.0	-32.8	-13.0	-19.8	
Mid Ch, 1880.0MHz									
3.760	-8.9	V	3.0	35.3	1.0	-43.2	-13.0	-30.2	
5.640	-1.4	V	3.0	34.7	1.0	-35.2	-13.0	-22.2	
7.520	1.3	V	3.0	34.9	1.0	-32.6	-13.0	-19.6	
9.400	8.8	V	3.0	35.3	1.0	-25.5	-13.0	-12.5	
11.280	6.5	V	3.0	34.7	1.0	-27.2	-13.0	-14.2	
3.760	-7.8	H	3.0	35.3	1.0	-42.1	-13.0	-29.1	
5.640	-3.6	H	3.0	34.7	1.0	-37.3	-13.0	-24.3	
7.520	2.7	H	3.0	34.9	1.0	-31.2	-13.0	-18.2	
9.400	2.9	H	3.0	35.3	1.0	-31.3	-13.0	-18.3	
11.280	3.5	H	3.0	34.7	1.0	-30.2	-13.0	-17.2	
High Ch, 1909.8 MHz									
3.822	-8.2	V	3.0	35.3	1.0	-42.5	-13.0	-29.5	
5.729	-1.1	V	3.0	34.7	1.0	-34.8	-13.0	-21.8	
7.640	2.1	V	3.0	35.0	1.0	-31.8	-13.0	-18.8	
9.549	1.0	V	3.0	35.3	1.0	-33.3	-13.0	-20.3	
11.458	4.0	V	3.0	34.6	1.0	-29.6	-13.0	-16.6	
3.822	-7.4	H	3.0	35.3	1.0	-41.7	-13.0	-28.7	
5.729	-1.8	H	3.0	34.7	1.0	-35.5	-13.0	-22.5	
7.640	3.0	H	3.0	35.0	1.0	-31.0	-13.0	-18.0	
9.549	1.8	H	3.0	35.3	1.0	-32.5	-13.0	-19.5	
11.458	2.6	H	3.0	34.6	1.0	-31.0	-13.0	-18.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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Band GSM850 GPRS

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 13I16373
Date: 10/28/13
Test Engineer: Trina Noor
Configuration: EUT and Earphone
Mode: TX, CELL BAND GPRS 850

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 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	-23.2	V	3.0	32.7	1.0	-54.9	-13.0	-41.9	
2.473	-19.6	V	3.0	31.4	1.0	-50.0	-13.0	-37.0	
3.297	-22.2	V	3.0	30.5	1.0	-51.7	-13.0	-38.7	
4.121	-20.9	V	3.0	29.8	1.0	-49.8	-13.0	-36.8	
4.945	-21.0	V	3.0	29.0	1.0	-48.9	-13.0	-35.9	
1.648	-25.9	H	3.0	32.7	1.0	-57.6	-13.0	-44.6	
2.473	-22.0	H	3.0	31.4	1.0	-52.3	-13.0	-39.3	
3.297	-23.0	H	3.0	30.5	1.0	-52.6	-13.0	-39.6	
4.121	-21.5	H	3.0	29.8	1.0	-50.3	-13.0	-37.3	
4.945	-20.3	H	3.0	29.0	1.0	-48.3	-13.0	-35.3	
Mid Ch, (836.6MHz)									
1.673	-23.6	V	3.0	32.6	1.0	-55.2	-13.0	-42.2	
2.510	-19.2	V	3.0	31.5	1.0	-49.6	-13.0	-36.6	
3.346	-22.6	V	3.0	30.5	1.0	-52.1	-13.0	-39.1	
4.183	-19.4	V	3.0	29.8	1.0	-48.2	-13.0	-35.2	
5.020	-20.9	V	3.0	28.9	1.0	-48.8	-13.0	-35.8	
1.673	-25.4	H	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-20.8	H	3.0	31.5	1.0	-51.3	-13.0	-38.3	
3.346	-23.3	H	3.0	30.5	1.0	-52.8	-13.0	-39.8	
4.183	-20.6	H	3.0	29.8	1.0	-49.3	-13.0	-36.3	
5.020	-19.2	H	3.0	28.9	1.0	-47.1	-13.0	-34.1	
High Ch, (848.8MHz)									
1.698	-23.1	V	3.0	32.5	1.0	-54.7	-13.0	-41.7	
2.546	-19.8	V	3.0	31.4	1.0	-50.3	-13.0	-37.3	
3.395	-21.8	V	3.0	30.5	1.0	-51.3	-13.0	-38.3	
4.244	-20.8	V	3.0	29.7	1.0	-49.5	-13.0	-36.5	
5.093	-21.8	V	3.0	28.8	1.0	-49.6	-13.0	-36.6	
1.698	-22.5	V	3.0	32.5	1.0	-54.0	-13.0	-41.0	
2.546	-19.3	V	3.0	31.4	1.0	-49.7	-13.0	-36.7	
3.395	-22.9	V	3.0	30.5	1.0	-52.4	-13.0	-39.4	
4.244	-20.2	V	3.0	29.7	1.0	-48.8	-13.0	-35.8	
5.093	-21.7	V	3.0	28.8	1.0	-49.5	-13.0	-36.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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