



FCC CFR47 PART 24 SUBPART E

CERTIFICATION TEST REPORT

FOR

GSM + Bluetooth & WLAN 2.4GHz

MODEL NUMBER: GT-S7278

FCC ID: A3LGTS7278

REPORT NUMBER: 13U16294-1, Revision D

ISSUE DATE: NOVEMBER 8, 2013

Prepared for

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416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA**

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Revision History

Rev.	Date	Revisions	Revised By
---	10/28/13	Initial Issue	P. Kim
A	11/4/13	Antenna gain information inserted. (Inserted test methodology reference & updated table of contents.)	P. Kim
B	11/6/13	Administrative changes, removing template descriptions as well as removing not applicable part reference.	P. Kim
C	11/7/13	Cleaned up summary table	P. Kim
D	11/8/13	Updated summary table and power section	P. Kim

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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 + Bluetooth & WLAN (2.4GHz) Phone

MODEL: GT-S7278

SERIAL NUMBER: FK-319-C

DATE TESTED: October 17-24, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 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:

Tested By:



PHILIP KIM
WISE PROGRAM MANAGER
UL Verification Services

CHARLES VERGONIO
WISE LAB TECHNICIAN
UL Verification Services

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, and 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>.

3.1. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency (MHz)	Peak Gain (dBi)
GSM1900, 1850~1910MHz	3.1

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

3.2. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	ETA3U31CBC	N/A	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

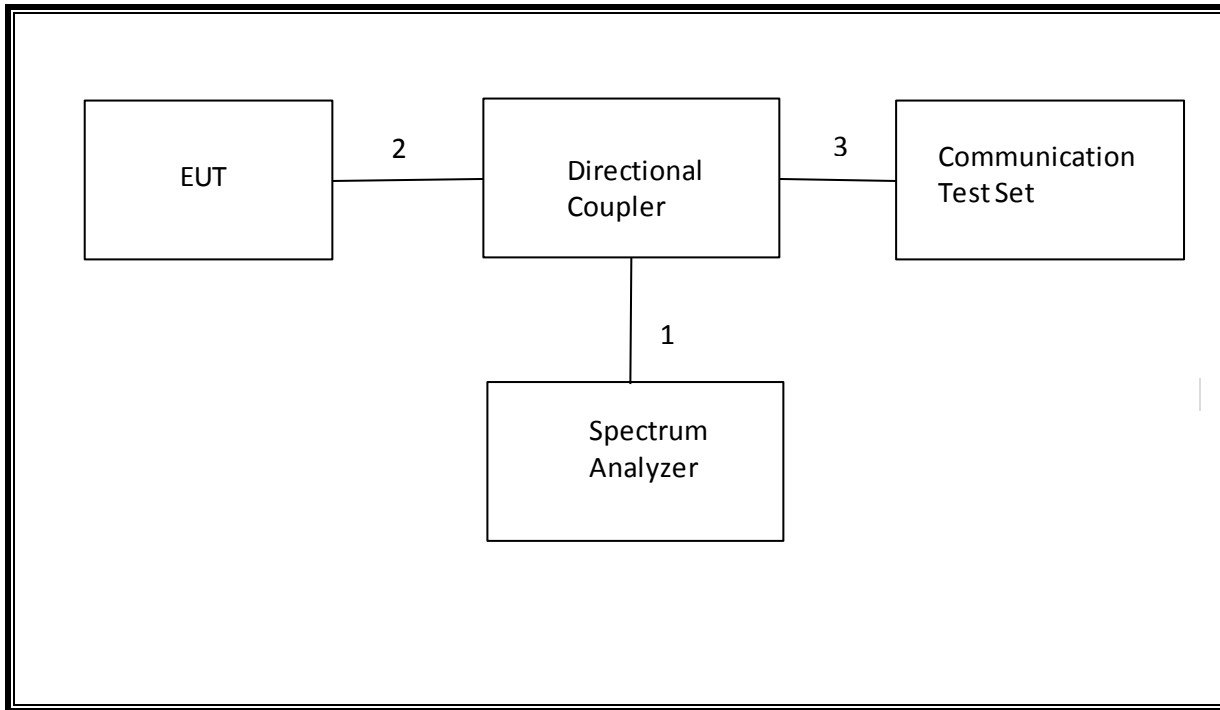
I/O CABLES (RADIATED SETUP)

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

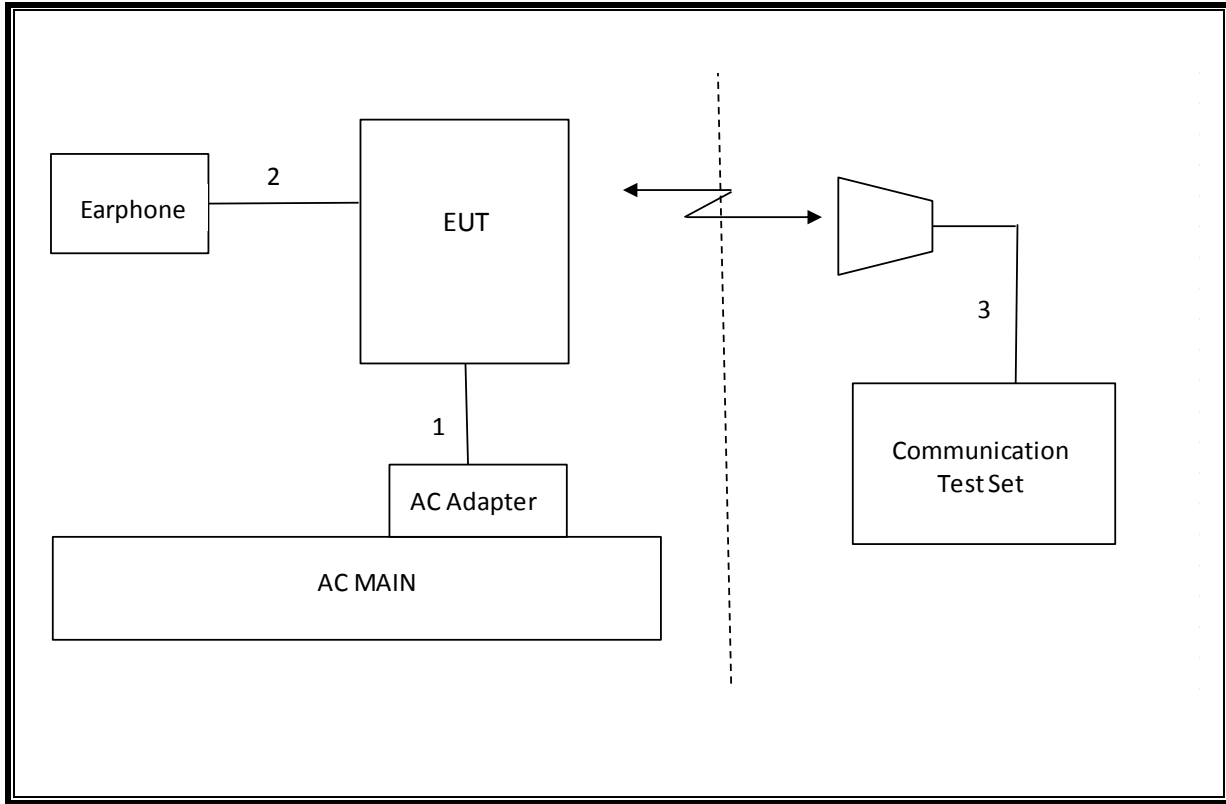
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, and FCC CFR Part 24.

5. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a GSM Phone with Bluetooth and WLAN 2.4G capability.

6.2. 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	
			mW	Peak	mW	Peak
GSM1900	1850~1910	GMSK	812.80	29.1		
	1850~1910	GPRS	812.80	29.1	660.70	28.2
	1850~1910	EGPRS	316.22	25.0	281.84	24.5

7. 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	10/25/13
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

8. Summary Table

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case	Note
2.1049	Occupied Band width (99%)	N/A	Conducted	Pass	245 KHz	GSM1900
24.238(a)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-18.84 dBm	GSM1900
				Pass		
2.1046	Conducted output power	N/A		Pass	29.1 dBm	GSM1900
24.235	Frequency Stability	2.5PPM		Pass	0.005 ppm	GSM1900
24.232(c)	Equivalent Isotropic Radiated Power	33dBm	Radiated	Pass	28.19 dBm	Band 2
24.238(a)	Radiated Spurious Emission	-13dBm		Pass	-46 dBm	GSM1900

9. RF POWER OUTPUT VERIFICATION

9.1. 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

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	29.1			
		661	1880	28.9			
		810	1909.8	28.9			
	GPRS	512	1850.2	29.1	28.3	26.1	24.0
		661	1880	28.9	27.9	25.9	23.9
		810	1909.8	28.9	27.8	25.9	24.0
	EDGE	512	1850.2	24.8	24.8	23.4	21.4
		661	1880	24.9	24.9	23.5	21.6
		810	1909.8	25.0	24.9	23.4	21.6

10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

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

LIMITS

For reporting purposes only

TEST PROCEDURE

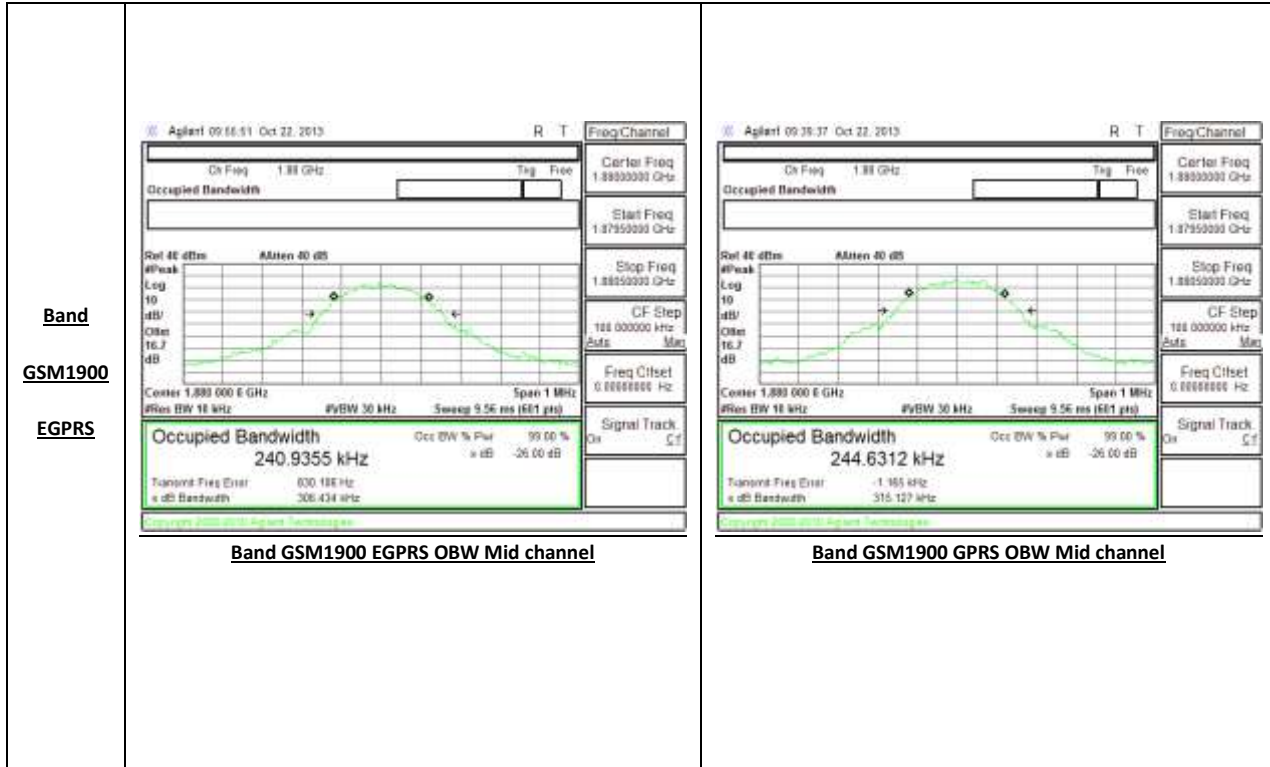
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

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

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM 1900	GPRS	512	1850.2	245	319
		661	1880	244	315
		810	1909.8	244	321
	EGPRS	512	1850.2	242	305
		661	1880	240	306
		810	1909.8	242	311

10.1.1. OCCUPIED BANDWIDTH PLOTS



10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238 and § 90.691

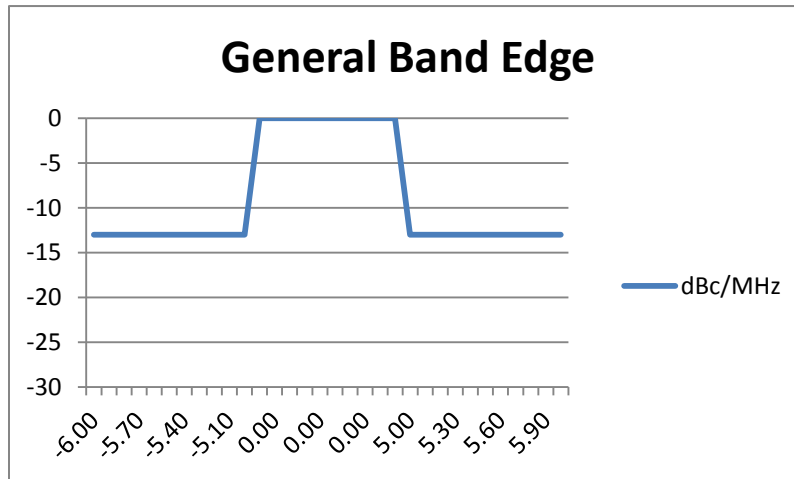
LIMITS

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.

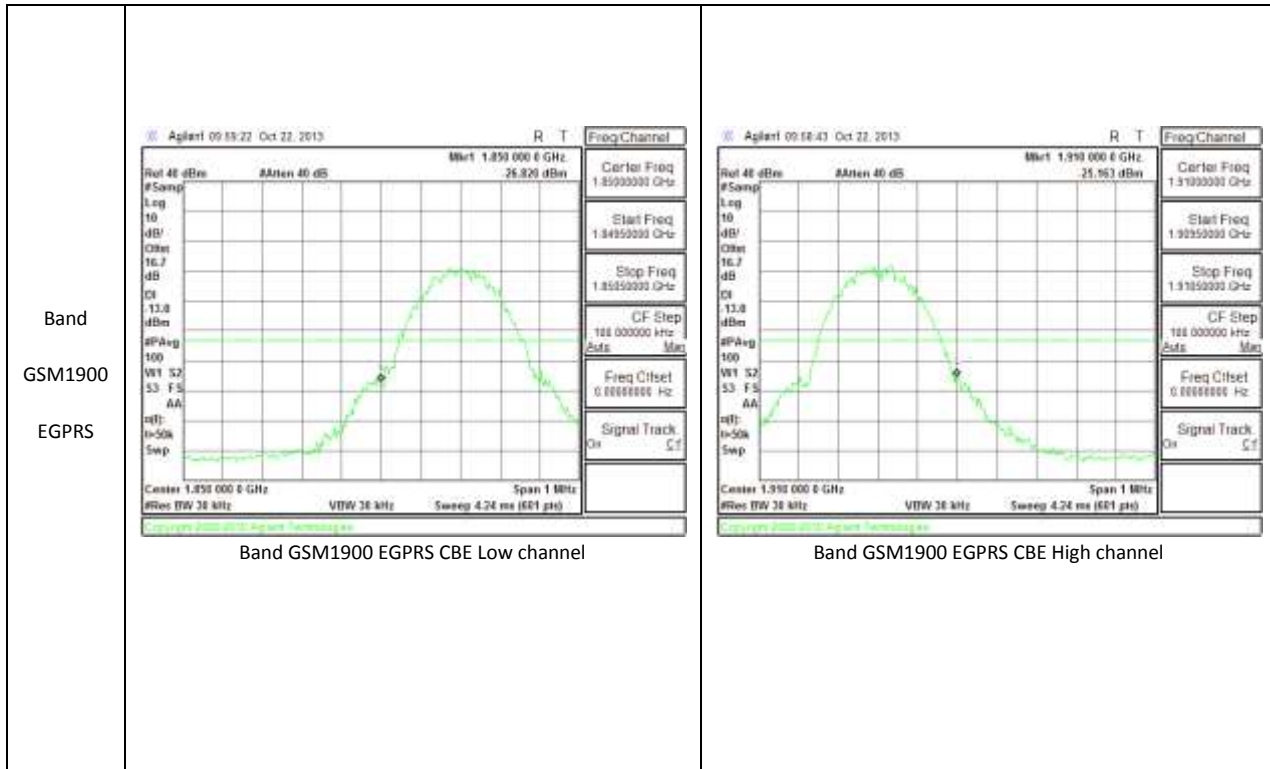


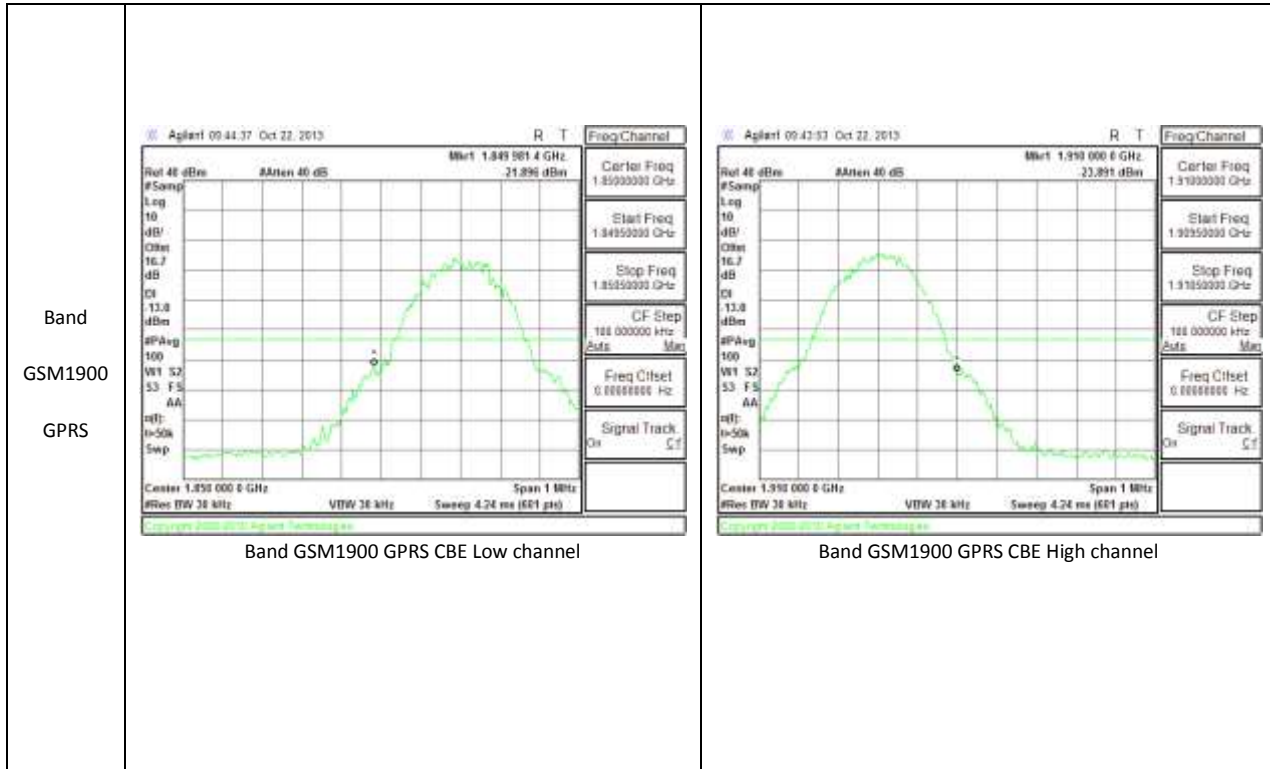
MODES TESTED

GSM 1900 (EGPRS & GPRS)

RESULTS

10.2.1. BAND EDGE PLOTS





10.3. 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.

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.

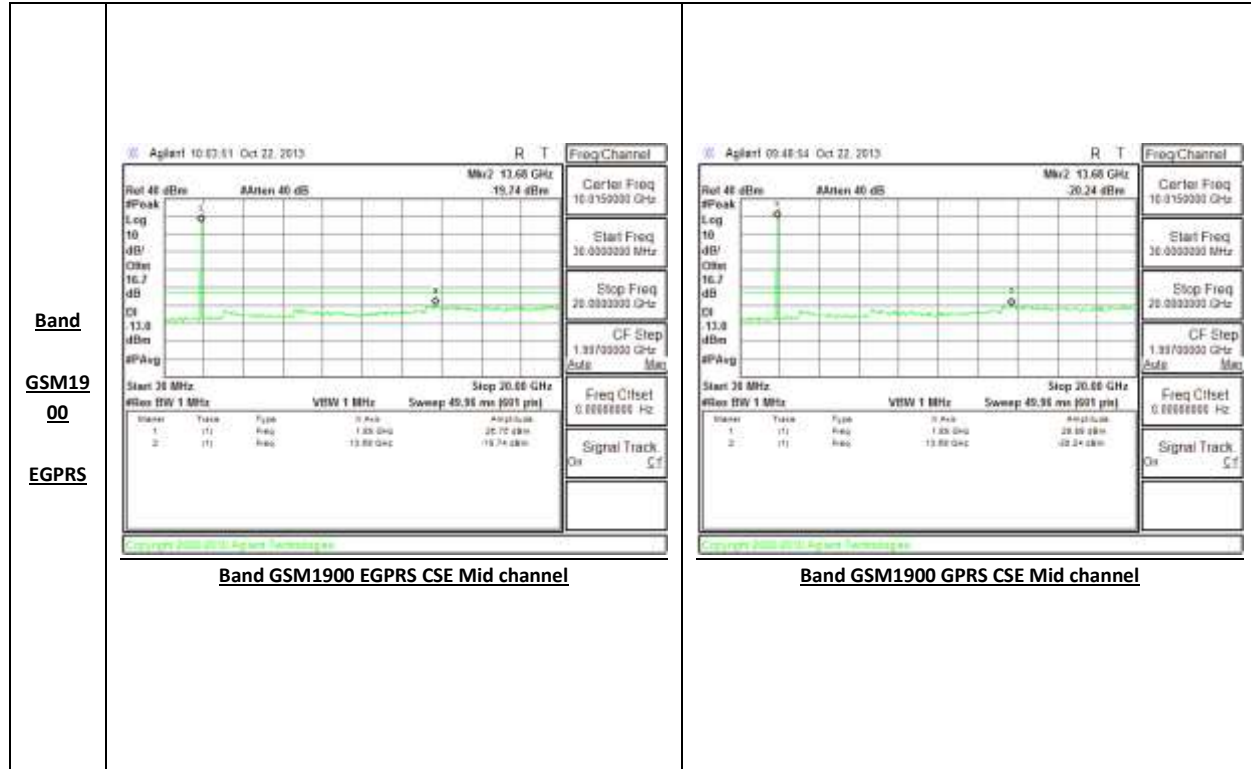
MODES TESTED

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 1900	GPRS	1850.2	-19.35	-13	6.35
		1880	-20.24	-13	7.24
		1909.8	-18.84	-13	5.84
	EGPRS	1850.2	-19.74	-13	6.74
		1880	-19.74	-13	6.74
		1909.8	-19.34	-13	6.34

10.3.2. OUT OF BAND EMISSIONS PLOTS



10.4. 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.

§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 placed inside a temperature chamber. The temperature is set to 20°C 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 +50°C 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 3.50 to 4.26 VDC.

MODES TESTED

GSM 1900 (EGPRS & GPRS)

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

Reference Frequency: GSM1900 Channel 661 Freq : 1880MHz @ 20C				
Limit: to stay +/-2.5ppm = 4700 Hz				
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		Limit (ppm)
3.8	20	1879.999989	0.00600	2.5
4.3	20	1880.000005	-0.00213	2.5

Reference Frequency: GSM1900 Channel 661 Freq : 1880MHz @ 20C				
Limit: to stay +/-2.5ppm = 4700 Hz				
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		Limit (ppm)
3.8	50	1879.999992	0.005	2.5
3.8	40	1879.999994	0.004	2.5
3.8	30	1879.999997	0.002	2.5
3.8	20	1879.999998	0.002	2.5
3.8	10	1880.000001	0.000	2.5
3.8	0	1880.000002	0.000	2.5
3.8	-10	1879.999997	0.002	2.5
3.8	-20	1879.999998	0.002	2.5
3.8	-30	1880.000005	-0.002	2.5

11. RADIATED TEST RESULTS

11.1. 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.

§ 90.635 Limitations on power and antenna height.

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts) ^{1,2,4}
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	31,000

1. Power is given in terms of effective radiated power (ERP).
2. 2Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.
3. 3Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).

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

Please refer to the fundamental measurement template on completing the radiated power measurement: (Please refer to the figure 5A)

MODES TESTED

GSM 1900 (GPRS & EGPRS)

TEST RESULTS

11.1.1. ERP/EIRP Results

	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM 1900	GPRS	512	1850.2	28.19	659.17
		661	1880	26.9	489.78
		810	1909.8	25.57	360.58
	EGPRS	512	1850.2	24.534	284.05
		661	1880	23.222	209.99
		810	1909.8	21.94	156.31

Band GSM1900 EGPRS	High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
	Company:		Samsung						
	Project #:		13U16294						
	Date:		10/18/13						
	Test Engineer:		Kiyas Kadida						
	Configuration:		X Position, AC Charger						
	Mode:		EGPRS 1900MHz						
	Test Equipment:								
	Receiving: Horn T120, and Chamber F 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	17.4	V	0.85	7.94	24.53	33.0	-8.5	
	1.850	14.1	H	0.85	8.80	22.05	33.0	-11.0	
	Mid Ch								
	1.880	16.1	V	0.85	7.95	23.22	33.0	-9.8	
	1.880	14.2	H	0.85	8.68	22.03	33.0	-11.0	
	High Ch								
	1.910	14.8	V	0.85	7.97	21.94	33.0	-11.1	
	1.910	13.9	H	0.85	8.57	21.66	33.0	-11.3	
	Rev. 3.17.11								

Band GSM1900 GPRS	High Frequency Fundamental Measurement Compliance Certification Services Chamber F																																																																																																	
	Company: Samsung																																																																																																	
	Project #: 13U16294																																																																																																	
	Date: 10/18/13																																																																																																	
	Test Engineer: Kiya Kadida																																																																																																	
	Configuration: X Position, AC Charger																																																																																																	
	Mode: GPRS 1900MHz																																																																																																	
	Test Equipment: Receiving: Horn T120, and Chamber F SMA Cables Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse																																																																																																	
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Band GSM1900 GPRS	High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
	Company: Samsung Project #: 13U16294 Date: 10/18/13 Test Engineer: Kiya Kadida Configuration: X Position, AC Charger Mode: GPRS 1900MHz								
	Test Equipment: Receiving: Horn T120, and Chamber F 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	21.1	V	0.85	7.94	28.19	33.0	-4.8	
	1.850	18.4	H	0.85	8.80	26.38	33.0	-6.6	
	Mid Ch								
	1.880	19.8	V	0.85	7.96	26.90	33.0	-6.1	
	1.880	17.9	H	0.85	8.68	25.73	33.0	-7.3	
High Ch									
1.910	18.4	V	0.85	7.97	26.53	33.0	-7.5		
1.910	17.9	H	0.85	8.57	26.57	33.0	-7.4		
Rev. 3.17.11									

11.2. 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

§ 90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

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

GSM 1900 (EGPRS & GPRS)

RESULTS

11.2.1. SPURIOUS RADIATION PLOTS

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 13U16294
Date: 10/18/13
Test Engineer: Kiya Kedida
Configuration: X Position, AC Charger
Mode: EGPRS 1900

Chamber

Pre-amplifier

Filter

Limit

5m Chamber A

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	-21.2	V	3.0	35.4	1.0	-55.6	-13.0	-42.6	
5.550	-16.1	V	3.0	34.7	1.0	-49.9	-13.0	-36.9	
7.400	-14.7	V	3.0	34.9	1.0	-48.6	-13.0	-35.6	
3.700	-21.6	H	3.0	35.4	1.0	-56.0	-13.0	-43.0	
5.550	-17.4	H	3.0	34.7	1.0	-51.1	-13.0	-38.1	
7.400	119.1	H	3.0	34.9	1.0	85.2	-13.0	98.2	
Mid Ch, 1880.0MHz									
3.760	-19.2	V	3.0	35.3	1.0	-53.5	-13.0	-40.5	
5.640	-13.0	V	3.0	34.7	1.0	-46.7	-13.0	-33.7	
7.520	-15.1	V	3.0	34.9	1.0	-49.1	-13.0	-36.1	
3.760	-20.7	H	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-17.0	H	3.0	34.7	1.0	-50.8	-13.0	-37.8	
7.520	-13.4	H	3.0	34.9	1.0	-47.3	-13.0	-34.3	
High Ch, 1909.8 MHz									
3.820	-21.5	V	3.0	35.3	1.0	-55.8	-13.0	-42.8	
5.729	-17.7	V	3.0	34.7	1.0	-51.5	-13.0	-38.5	
7.640	-12.9	V	3.0	35.0	1.0	-46.8	-13.0	-33.8	
3.820	-20.4	H	3.0	35.3	1.0	-54.6	-13.0	-41.6	
5.729	-15.8	H	3.0	34.7	1.0	-49.5	-13.0	-36.5	
7.640	-12.7	H	3.0	35.0	1.0	-46.6	-13.0	-33.6	

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

Band
 GSM1900
 EGPRS

**Compliance Certification Services
 Above 1GHz High Frequency Substitution Measurement**

Company: Samsung
Project #: 13U16294
Date: 10/18/13
Test Engineer: Kiya Kedida
Configuration: X Position, AC Charger
Mode: GPRS 1900

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

Band
GSM1900
GPRS

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	-20.3	V	3.0	35.4	1.0	-54.7	-13.0	-41.7	
5.550	-16.7	V	3.0	34.7	1.0	-50.4	-13.0	-37.4	
7.400	-13.8	V	3.0	34.9	1.0	-47.7	-13.0	-34.7	
3.700	-20.4	H	3.0	35.4	1.0	-54.8	-13.0	-41.8	
5.550	-16.8	H	3.0	34.7	1.0	-50.5	-13.0	-37.5	
7.400	-13.6	H	3.0	34.9	1.0	-47.5	-13.0	-34.5	
Mid Ch, 1880.0MHz									
3.760	-20.1	V	3.0	35.3	1.0	-54.4	-13.0	-41.4	
5.640	-17.0	V	3.0	34.7	1.0	-50.7	-13.0	-37.7	
7.520	-14.1	V	3.0	34.9	1.0	-48.0	-13.0	-35.0	
3.760	-20.6	H	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-16.4	H	3.0	34.7	1.0	-50.1	-13.0	-37.1	
7.520	-13.1	H	3.0	34.9	1.0	-47.1	-13.0	-34.1	
High Ch, 1909.8 MHz									
3.822	-20.3	V	3.0	35.3	1.0	-54.6	-13.0	-41.6	
5.729	-17.4	V	3.0	34.7	1.0	-51.2	-13.0	-38.2	
7.640	-13.6	V	3.0	35.0	1.0	-47.5	-13.0	-34.5	
3.822	-20.1	H	3.0	35.3	1.0	-54.4	-13.0	-41.4	
5.729	-15.7	H	3.0	34.7	1.0	-49.5	-13.0	-36.5	
7.640	-12.1	H	3.0	35.0	1.0	-46.0	-13.0	-33.0	

Rev. 03 03 09

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