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Report No.: SHEMO09080092101
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TEST REPORT

Application No. : SHEMO09080092101
Applicant: Sagem Wireless
Address: 2, rue du Petit Albi, BP 28250-95801 CERGY PONTOISE Cedex
FCC ID: M9HPHIL
Equipment Under Test (EUT):
Product Name: GSM Mobile Phone
Brand Name: SAGEM
Model Name: PHIL
Type Name: PHIL
Standards: FCC part 2, 24E
Date of Receipt: Aug 10, 2009
Date of Test: Aug 11, 2009 to Aug 14, 2009
Date of Issue: Aug 14, 2009

Test Result :	PASS *
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* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further details.

Tino Pan
E&E Section Manager
SGS-CSTC Co., Ltd.

Bruce Zhan
Project Engineer
SGS-CSTC Co., Ltd.

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2 Test Summary

Description of Test	FCC Rules	Result
RF Power Output	2.1046(a) 24.232(a)	Compliant
99% Occupied Bandwidth	2.1049(h)	Compliant
Effective Isotropic Radiated Power	2.1046(a) 24.232(a)	Compliant
Out of Band Emissions at antenna Terminals and Band Edge	2.1051 24.238(a)	Compliant
Field Strength of Spurious Emissions	2.1053 24.238(a)	Compliant
Frequency Stability vs. Temperature and Voltage	2.1055(d)(1)(2)	Compliant



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4 General Information

4.1 Client Information

Applicant: Sagem Wireless
Address of Applicant: 2, rue du Petit Albi, BP 28250-95801 CERGY PONTOISE Cedex

4.2 General Description of E.U.T.

Product Name:	GSM Mobile Phone
Brand Name:	SAGEM
Model Name:	PHIL
Type Name:	PHIL
Product General Description:	GSM Mobile Phone
Power Supply:	Adapter Information: Model: DCH3-050US Input: AC 110-230V, 120mA, 50/60Hz Output : DC 5V, 500mA

PCS 1900

	Operating frequency		Rated Power
Cellular phone standards Frequency Range and Power:	GSM/GPRS 1900	1850MHz-1910MHz	30dBm
Type of Emission:	245KGXW		
IMEI:	355362039950238		
Hardware Version:	V0x		
Software Version:	E N,MD		
IMEI:	355362039950253		
Hardware Version:	V0x		
Software Version:	E N,MD		

4.3 Test Location

Tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shanghai EMC Laboratory

588 West Jindu Road, Songjiang District, Shanghai, China

Tel: +86 21 61915666

Fax: +86 21 61915655



4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration **402683**, Feb 23, 2009. SGS-CSTC is an authorized test laboratory for the DoC process.

4.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-C-2004 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.



5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2009-6-4	2010-6-3
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2009-6-4	2010-6-3
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2009-4-11	2010-4-10
4	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2009-6-4	2010-6-3
5	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2009-6-4	2010-6-3
6	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY—2003P	--	2008-10-15	2009-10-14
7	CLAMP METER	FLUKE	316	86080010	2009-04-27	2010-04-26
8	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2008-10-21	2009-10-20
9	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2008-10-16	2009-10-15
10	TEMPERATURE& HUMIDITY BOX	KSON	THS-D2C-100	K40723	2008-11-18	2009-11-17
11	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2009-6-18	2010-6-17
12	DC power	KIKUSUI	PMC35—3	NF100260	--	--
13	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2009-5-8	2010-5-7
14	Power meter	Rohde & Schwarz	NRP	101641	2009-5-5	2010-5-4
15	UNIVERSAL RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMU 200	105964	2009-4-14	2010-4-13
16	Band Reject Filter	WRCG 1850/1910-1835/1925-40/8SS	Amiden Ireland	13	2009-1-27	2010-1-26
17	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2009-6-4	2010-6-3



6 Test Results

6.1 E.U.T. test conditions

Operating Environment:

Temperature:

20.0 -25.0 °C

Humidity:

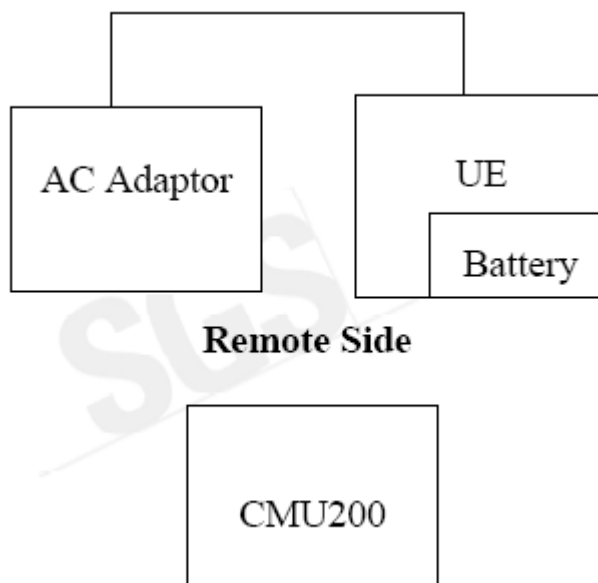
38-48 % RH

Atmospheric Pressure:

992 -1006 mbar

Configuration of

Tested System:

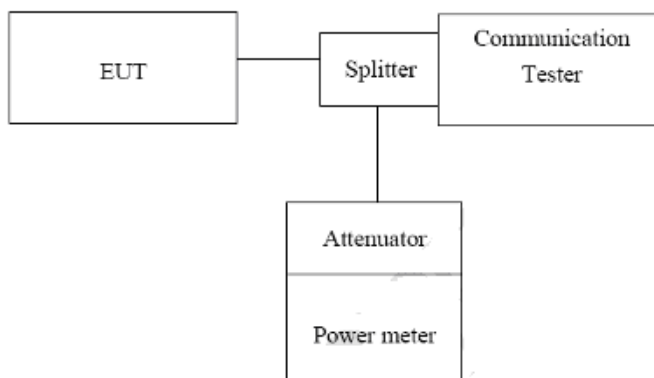




6.2 RF Power Output

Test Requirement: Part 2.1046
Part 24.232(d) peak Power measurement

Test Setup



Measurement Setup for testing on Antenna connector.

Test Date: Aug 11, 2009
Test Status: Test lowest, middle, highest channel.
Test Procedure:

The transmitter output was connected to calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power in dBm. The power output at the transmitter antenna port was determined by adding the value of attenuator to the power meter reading.

Measurement Result:

RF Conducted output power

Result:

EUT Mode	Channel	Frequency(MHz)	Power Meter Reading level (dBm)	Cable Loss (dB)	Power (dBm)
1900	512	1850.2	30.65	0.2	30.85
	661	1880.0	30.43	0.2	30.63
	810	1909.8	29.85	0.2	30.05



6.3 Occupied Bandwidth

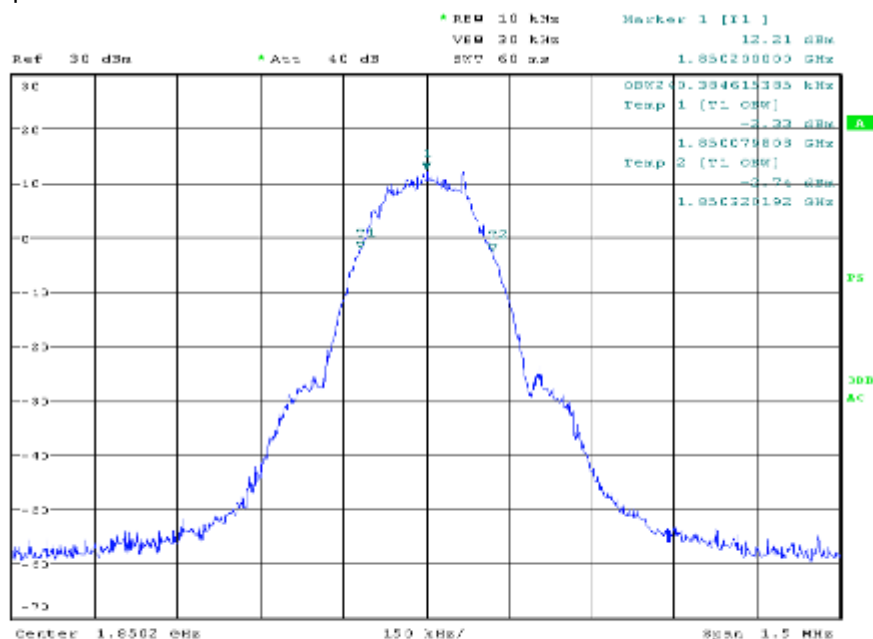
Test Requirement: Part 2.1049
Test Date: Aug 11, 2009
Test Status: Test lowest, middle, highest channel.
Test Procedure:

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW \geq 3 times RBW, 99% bandwidth were measured, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

Test result:

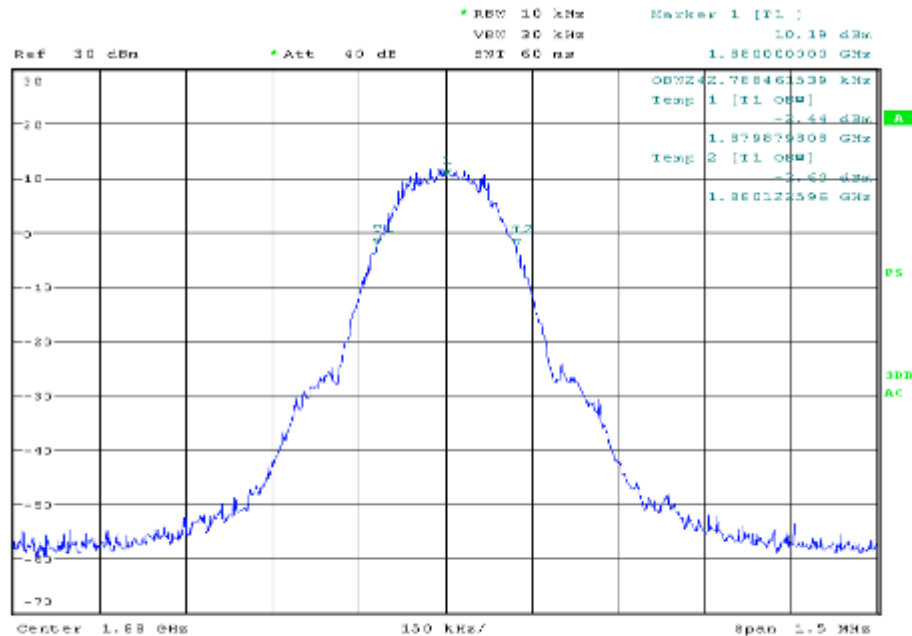
EUT Mode	Frequency (MHz)	CH	99% Bandwidth (kHz)
PCS 1900	1850.2	512	240.384
	1880.0	661	242.788
	1909.8	810	245.192

Graph: Channel Low

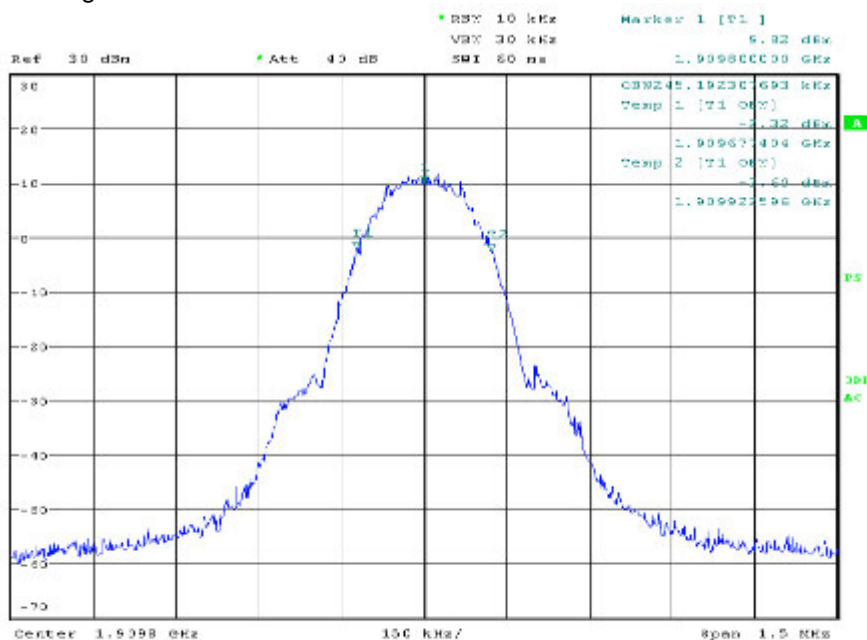




Channel Mid



Channel High



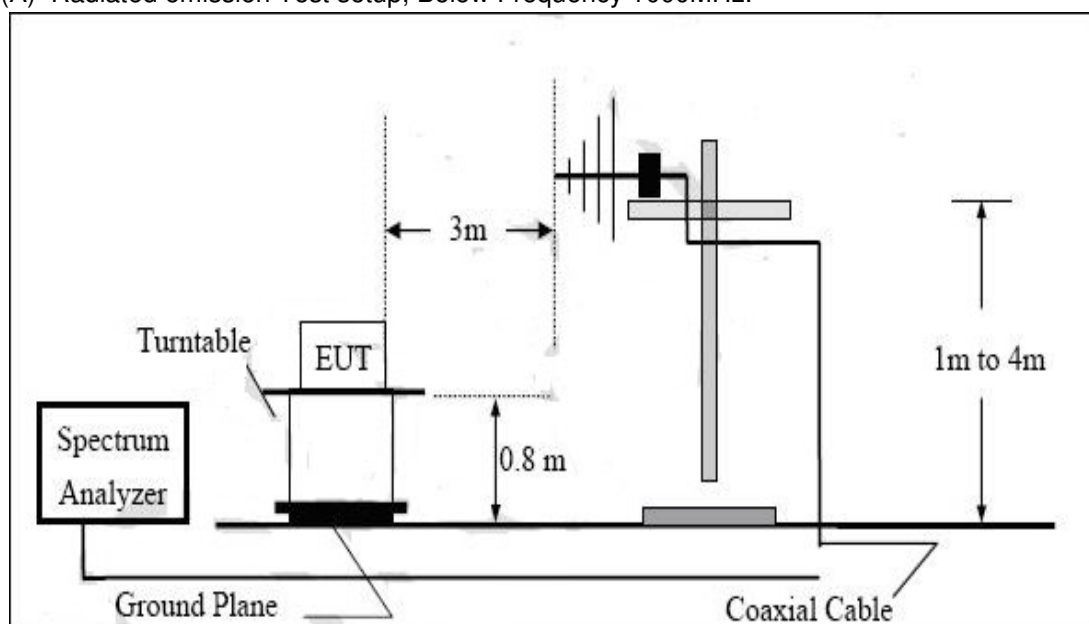
6.4 Effective Isotropic Radiated Power

Test Requirement: Part 2.1046
Part 22.913(a) Mobile station are limited to 7W EIRP.

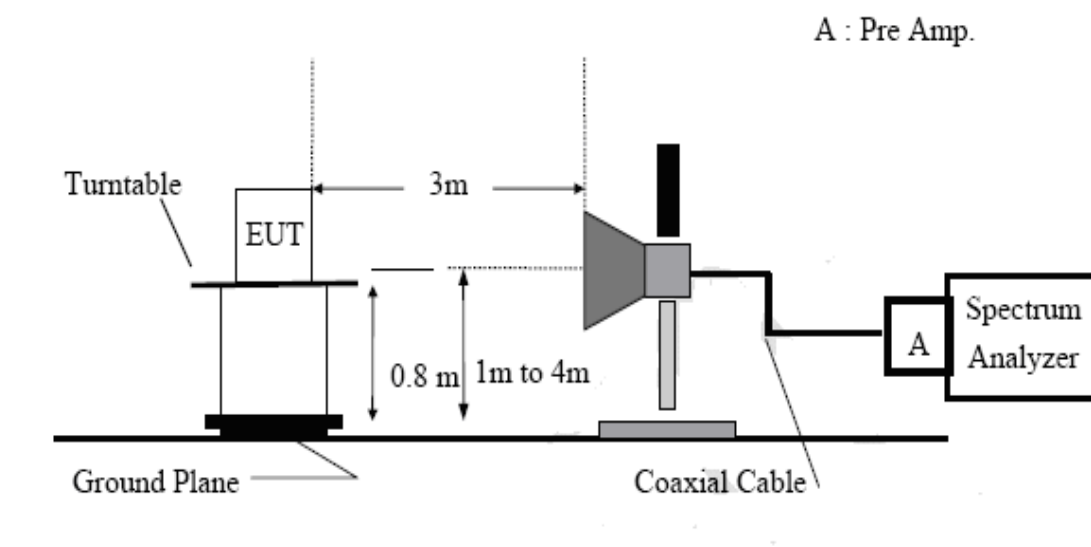
Test Date: Aug 13, 2009

Test Setup:

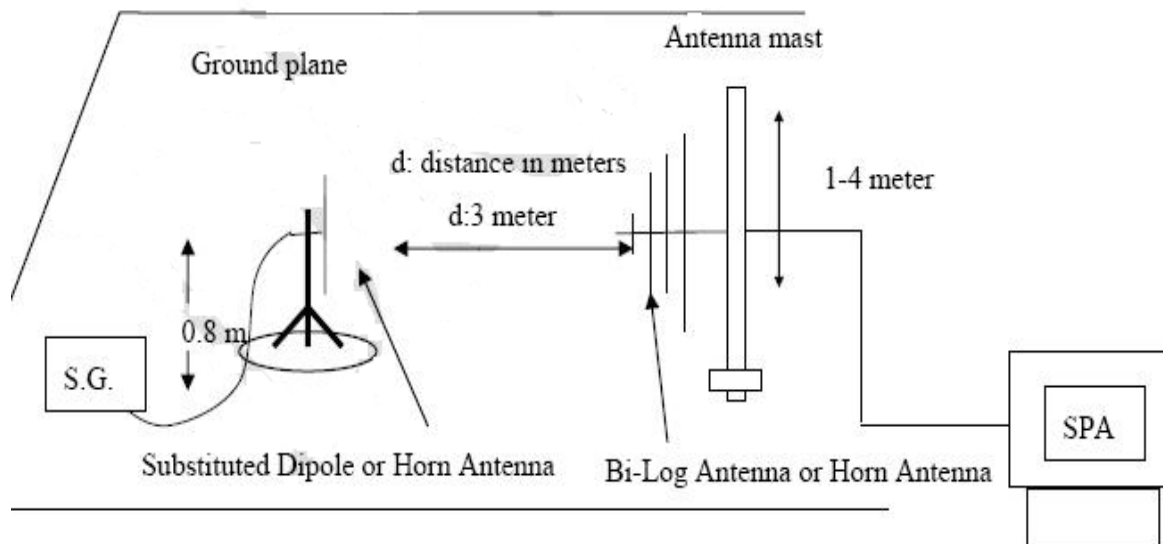
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test Procedure:

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. During the measurement, the EUT was in communication with the station. The highest emission was recorded with the rotation of the turntable and lowering of the test antenna from 4 m to 1 m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

EIRP in frequency band 1850.5-1909.8 MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$



Measurement result:

The RBW, VBW of SPA for frequency

Below 1GHz was RBW=300KHz, VBW=1MHz;

Above 1GHz was RBW=1MHz, VBW=3MHz

EUT mode	Frequen cy(MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. output (dBm)	Antenna Gain (dBi)	Cable loss (dB)	EIRP (dBm)	Limit (dBm)
PCS 1900	1850.2	512	H	V	108.44	11.2	9.15	4.15	16.2	33.0
				H	116.20	17.3	9.15	4.15	22.3	33.0
	1880.0	661	H	V	108.43	13.47	9.22	4.28	18.41	33.0
				H	113.25	17.52	9.22	4.28	22.46	33.0
	1809.8	810	H	V	111.10	14.2	9.25	4.41	19.04	33.0
				H	116.53	19.6	9.25	4.41	24.44	33.0



6.5 Out of band emissions at antenna Terminals

6.5.1 Band edges emissions

Test Requirement: Part 2.1051

FCC part 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than $43+10\log(\text{Mean power in watts})$ dBc below the mean power output outside a license's frequency block(-13dBm).

Test Date: Aug 14, 2009

Test Procedure:

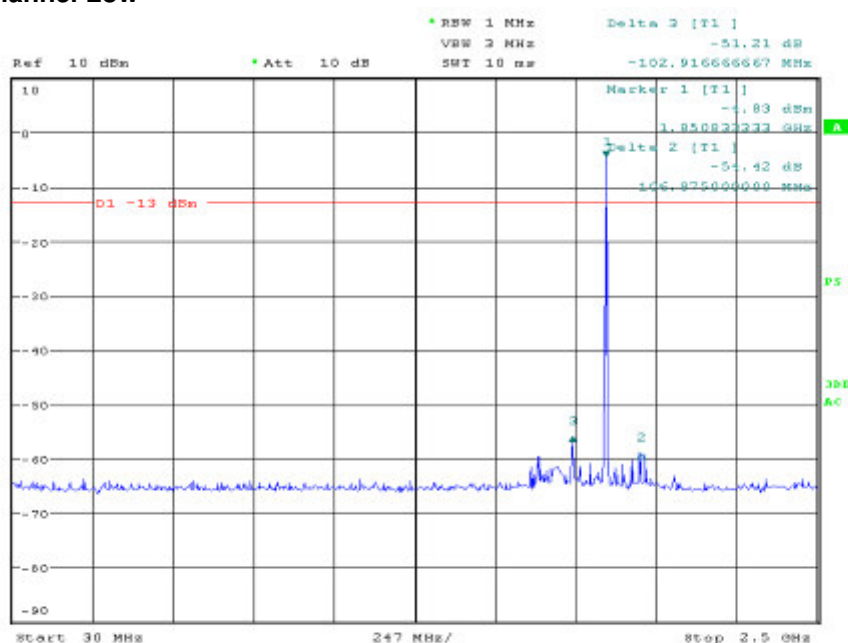
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10th harmonic.

For the out of band: set RBW=1MHz, VBW=3MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

Band Edge requirements: In 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=--13dBm.

Measurement result:

Channel Low

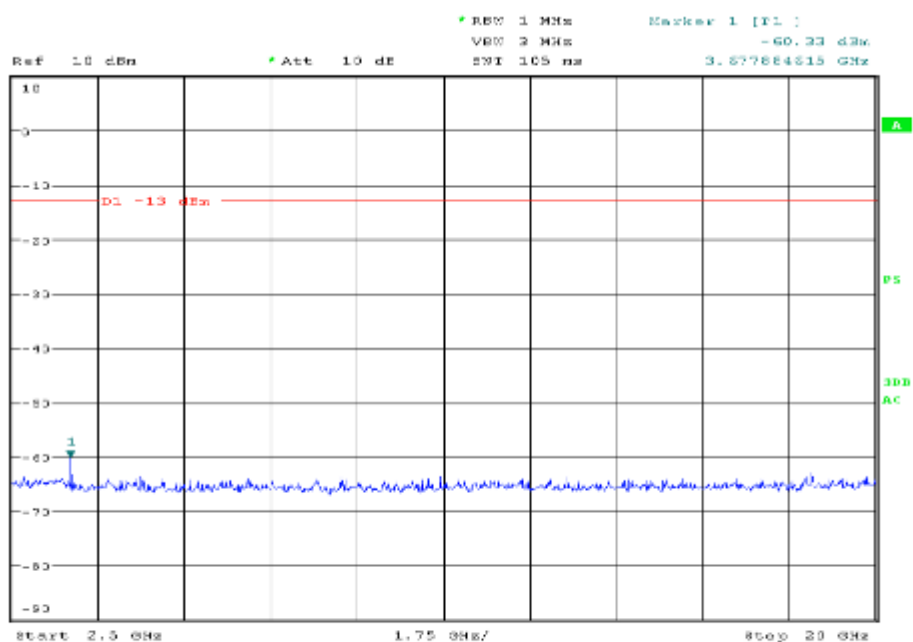




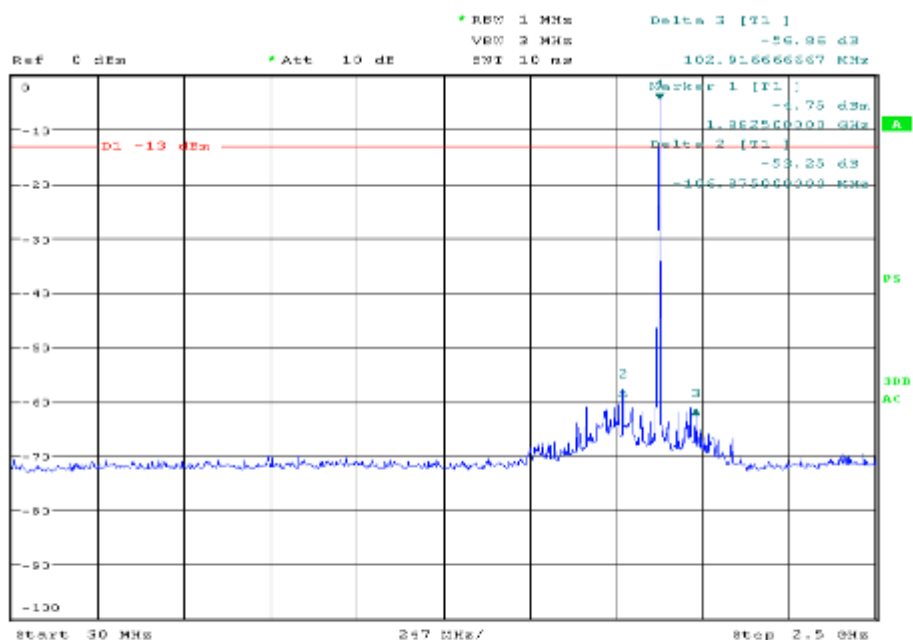
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Channel Mid

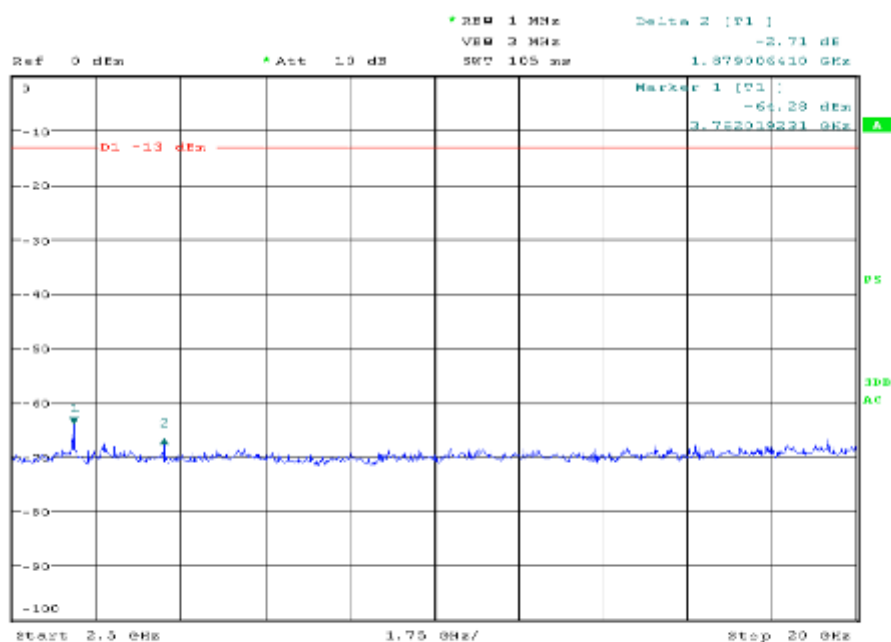




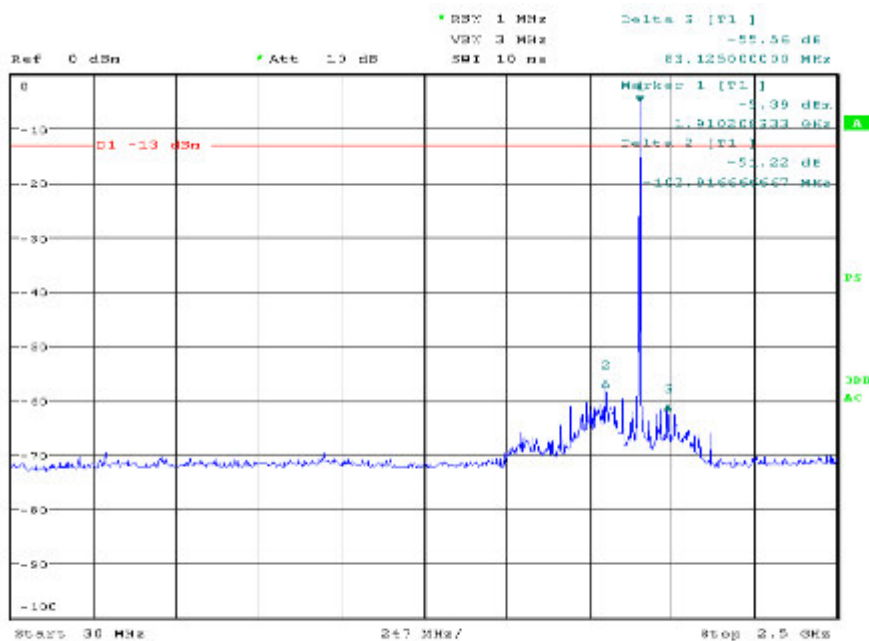
**SGS-CSTC Standards
Technical Services Co., Ltd.**

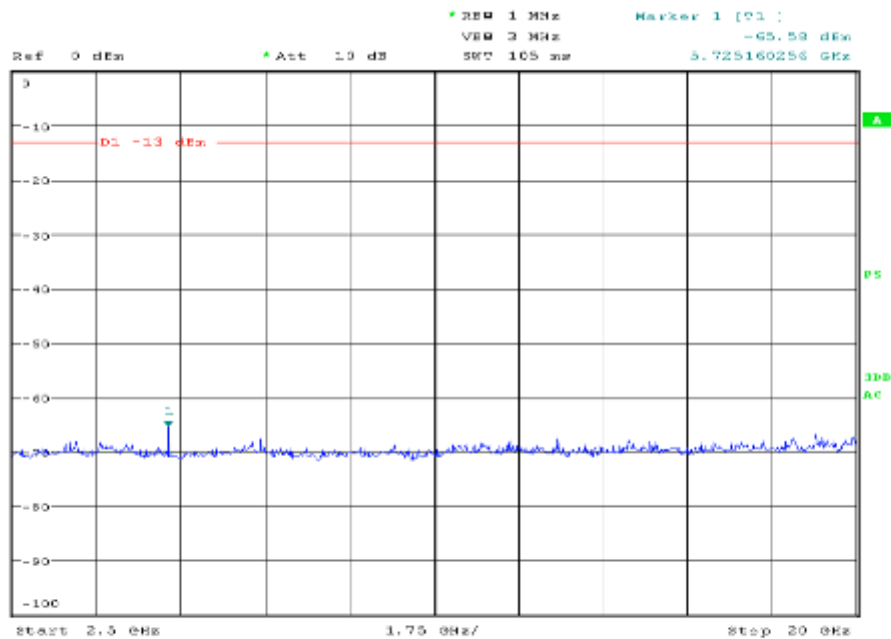
ReportNo.: SHEMO09080092101

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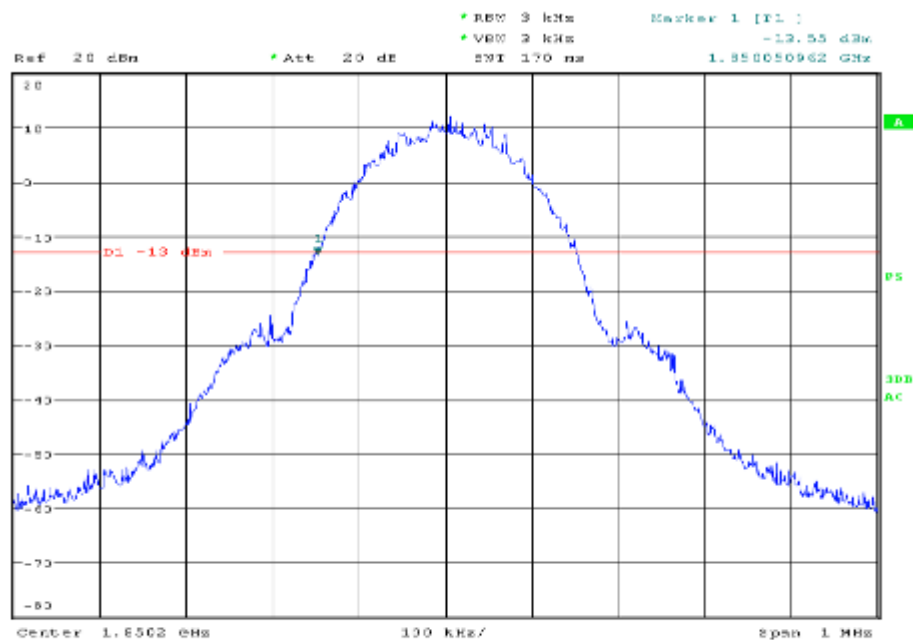


Channel High



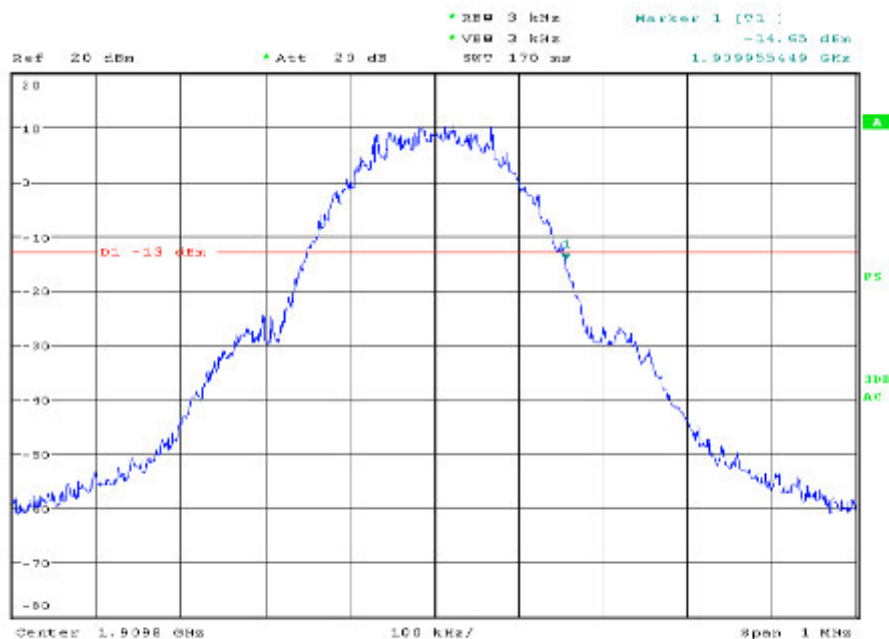


Band Edge emission Channel Low





Band Edge emission Channel high



6.6 Field Strength of Radiated Spurious Emissions

Test Requirement: Part 2.1051

FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than $43+10\log(\text{Mean power in watts})$ dBc below the mean power output outside a license's frequency block(-13dBm).

Test Date: Aug 13, 2009

Test Procedure:

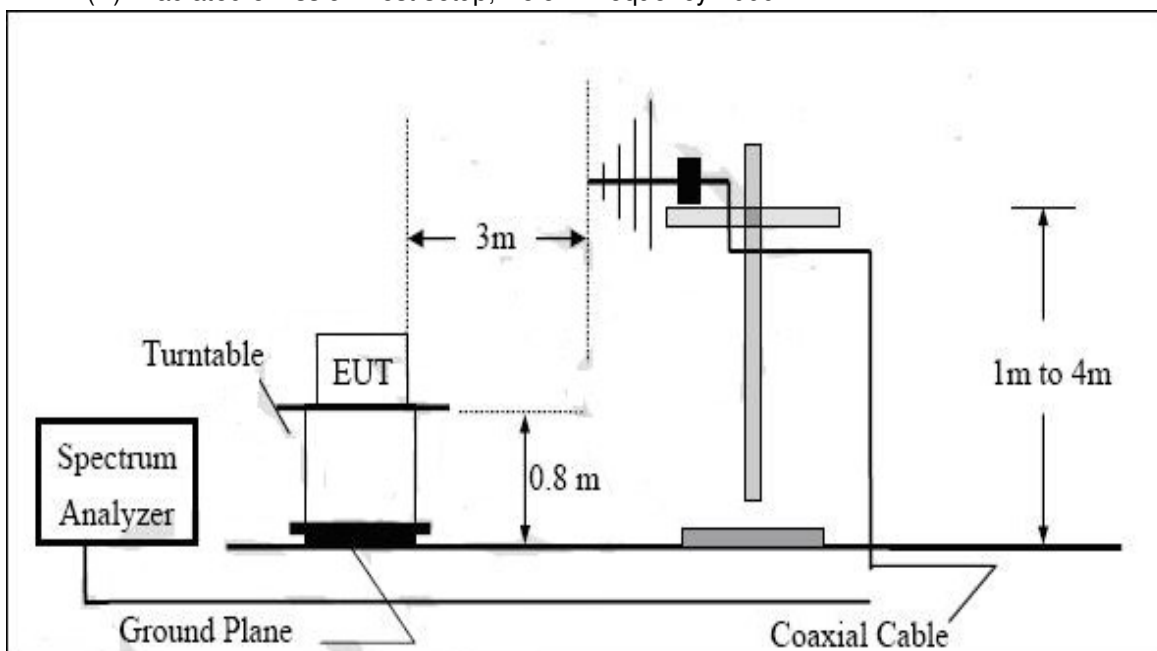
The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10^{th} harmonic.

For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= --13dBm

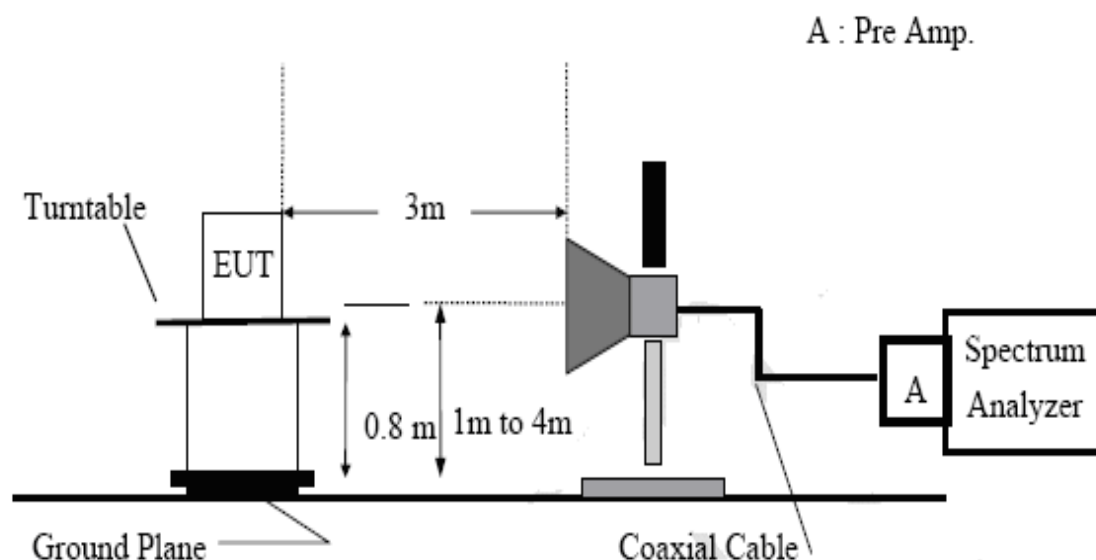
Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=--13dBm.

Test Setup:

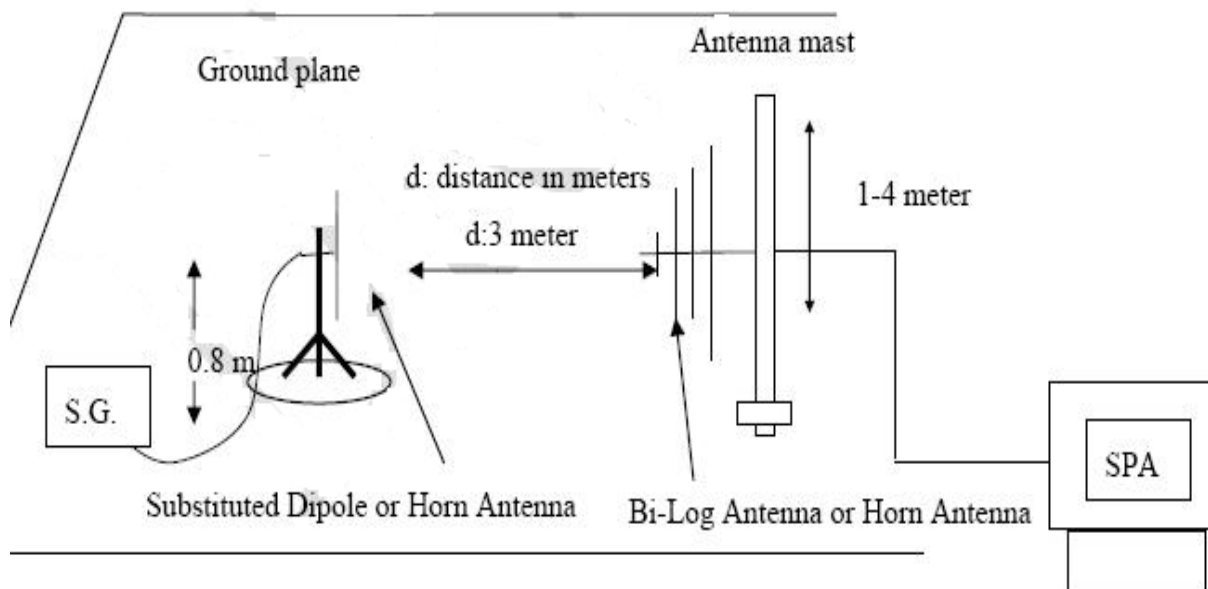
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test Procedure:

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. During the measurement, the EUT was communication with the station. The highest



emission was recorded with the rotation of the turntable and lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

EIRP in frequency band 1850.5-1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

Radiated spurious Emission Measurement Result: PCS 1900 mode

Fundamental Frequency: 1850.2MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100	43.3	H	-53.2	-1.80	1.02	-56.02	-13	43.02
200	44.4	H	-52.4	-1.40	1.66	-55.46	-13	42.46
800	45.2	H	-51.6	-2.87	2.10	-56.57	-13	43.57
1800	46.1	H	-50.47	7.0	4.28	-47.75	-13	34.75
3700.4	44.3	H	-50.21	8.35	4.57	-46.43	-13	33.43
5550.6	44.2	H	-49.88	9.55	5.57	-45.9	-13	32.90
7400.8	44.8	H	-48.72	9.75	7.62	-46.59	-13	33.59
9251	45.4	H	-47.69	10.55	10.9	-48.04	-13	35.04
100	44	V	-54.31	-1.80	1.02	-57.13	-13	44.13
200	44.1	V	-55.2	-1.40	1.66	-58.26	-13	45.26
800	43	V	-54.93	-2.87	2.10	-59.9	-13	46.90
1800	46.2	V	-51.52	7.00	4.28	-48.8	-13	35.80
3700.4	45.3	V	-53.24	8.35	4.57	-49.46	-13	36.46
5550.6	45.2	V	-54.33	9.55	5.57	-50.35	-13	37.35
7400.8	45.1	V	-52.68	9.75	7.62	-50.55	-13	37.55
9251	44.8	V	-50.24	10.55	10.9	-50.59	-13	37.59

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

$$\text{ERP/EIRP(dBm)} = \text{S.G. Output(dBm)} + \text{Antenna Gain(dBd/dBi)} - \text{Cable Loss}$$



Radiated spurious Emission Measurement Result: PCS 1900 mode

Fundamental Frequency: 1880.0MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100	43.3	H	-53.45	-1.8	1.02	-56.27	-13	43.27
200	44.4	H	-55.28	-1.4	1.66	-58.34	-13	45.34
800	45.2	H	-54.95	-2.87	2.1	-59.92	-13	46.92
1800	46.1	H	-51.95	7	4.28	-49.23	-13	36.23
3700.4	44.3	H	-51.95	8.35	4.57	-48.17	-13	35.17
5550.6	44.2	H	-52.05	9.55	5.57	-48.07	-13	35.07
7400.8	44.8	H	-52	9.75	7.62	-49.87	-13	36.87
9251	45.4	H	-54.11	10.55	10.9	-54.46	-13	41.46
100	44	V	-54.95	-1.8	1.02	-57.77	-13	44.77
200	44.1	V	-54.95	-1.4	1.66	-58.01	-13	45.01
800	43	V	-53.95	-2.87	2.1	-58.92	-13	45.92
1800	46.2	V	-53.15	7	4.28	-50.43	-13	37.43
3700.4	45.3	V	-54.51	8.35	4.57	-50.73	-13	37.73
5550.6	45.2	V	-54.65	9.55	5.57	-50.67	-13	37.67
7400.8	45.1	V	-54.03	9.75	7.62	-51.9	-13	38.9
9251	44.8	V	-54.15	10.55	10.9	-54.5	-13	41.5

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

$ERP/EIRP(dBm) = S.G. Output(dBm) + Antenna Gain(dBd/dBi) - Cable Loss$



Radiated spurious Emission Measurement Result: PCS 1900 mode

Fundamental Frequency: 1909.8MHz

Frequency (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dBm)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100	43.3	H	-53	-1.8	1.02	-55.82	-13	42.82
200	44.4	H	-52.89	-1.4	1.66	-55.95	-13	42.95
800	45.2	H	-52.68	-2.87	2.1	-57.65	-13	44.65
1800	46.1	H	-53.17	7	4.28	-50.45	-13	37.45
3700.4	44.3	H	-53.11	8.35	4.57	-49.33	-13	36.33
5550.6	44.2	H	-52.9	9.55	5.57	-48.92	-13	35.92
7400.8	44.8	H	-53.93	9.75	7.62	-51.8	-13	38.8
9251	45.4	H	-53.67	10.55	10.9	-54.02	-13	41.02
100	44	V	-54.17	-1.8	1.02	-56.99	-13	43.99
200	44.1	V	-54.55	-1.4	1.66	-57.61	-13	44.61
800	43	V	-53.67	-2.87	2.1	-58.64	-13	45.64
1800	46.2	V	-53	7	4.28	-50.28	-13	37.28
3700.4	45.3	V	-54.17	8.35	4.57	-50.39	-13	37.39
5550.6	45.2	V	-54.27	9.55	5.57	-50.29	-13	37.29
7400.8	45.1	V	-53.91	9.75	7.62	-51.78	-13	38.78
9251	44.8	V	-54.31	10.55	10.9	-54.66	-13	41.66

Remark:

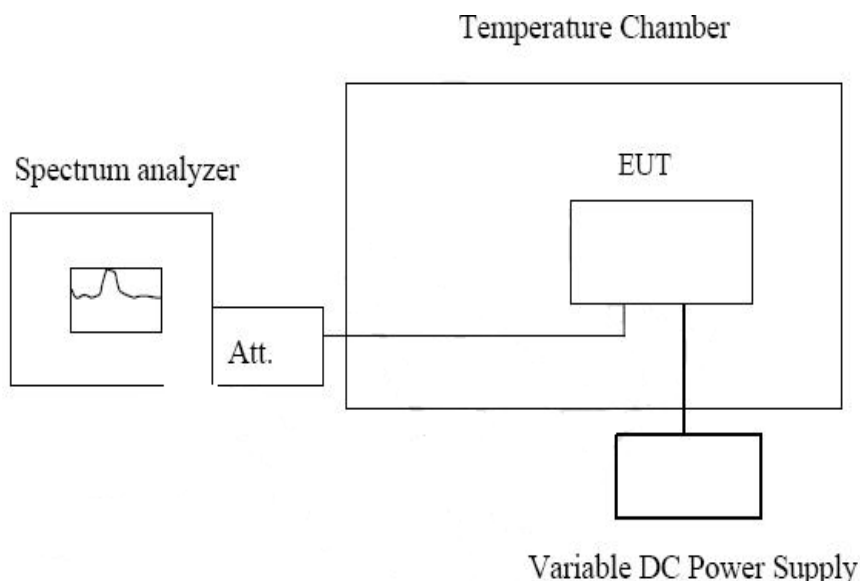
1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

$$\text{ERP/EIRP(dBm)} = \text{S.G. Output(dBm)} + \text{Antenna Gain(dBd/dBi)} - \text{Cable Loss}$$

6.7 Frequency Stability V.S. TEMPERATURE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)
 Test Date: Aug 14, 2009
 Test Status: Test in fixed channel.
 Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the Spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes record the frequency. Repeat step measure with 10 degree per stage until the highest temperature of 50 degree reached.

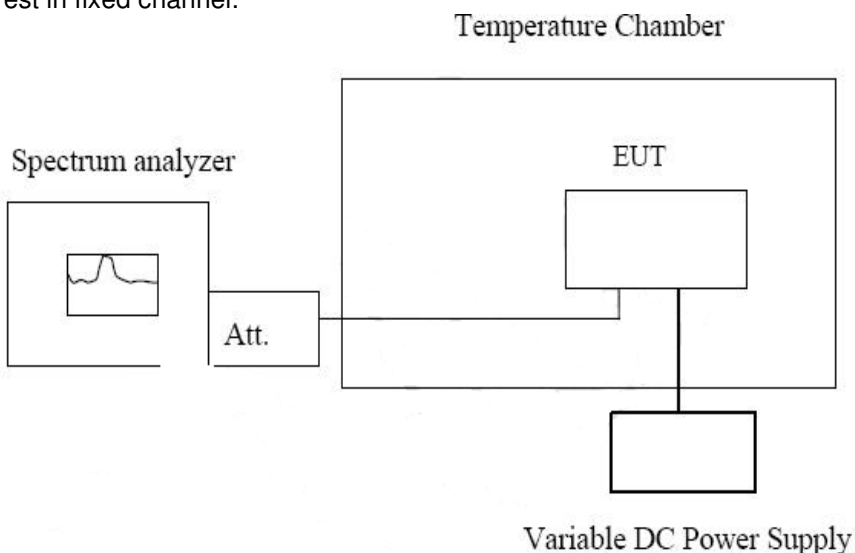
Frequency Tolerance: +/-2.5ppm for 1900MHz band



Reference Frequency: PCS Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature(degree)	(MHz)		
3.9	-30	1879.999922	78	4700
3.9	-20	1879.999878	122	4700
3.9	-10	1879.999955	45	4700
3.9	10	1879.999944	56	4700
3.9	20	1879.999952	48	4700
3.9	30	1879.999977	23	4700
3.9	40	1879.999929	71	4700
3.9	50	1879.999968	32	4700

6.8 Frequency Stability V.S. VOLTAGE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)
 Test Date: Aug 14, 2009
 Test Status: Test in fixed channel.
 Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

Set chamber temperature to 25 degree. Use a variable AC power/ DC power supply to power the EUT and set the Voltage to rated voltage. Set the spectrum analyzer RBW enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme voltage variation (+/-15%) and endpoint, record the maximum frequency change.

Frequency Tolerance: +/-2.5ppm for 1900MHz band

Reference Frequency: PCS Mid channel 1880MHz@ 25 degree				
Limit: +/- 2.5ppm = 4700Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
3.9	25	1879.999990	10	4700
3.8	25	1879.999994	6	4700
3.7	25	1880.000056	-56	4700
3.6	25	1879.999981	19	4700
3.55 (Endpoint)	25	1880.000072	-72	4700

Note: The High and normal voltage is DC 3.9V, and low voltage is DC 3.55V.

6.9 Conducted Emissions Mains Terminals, 150 kHz to 30MHz

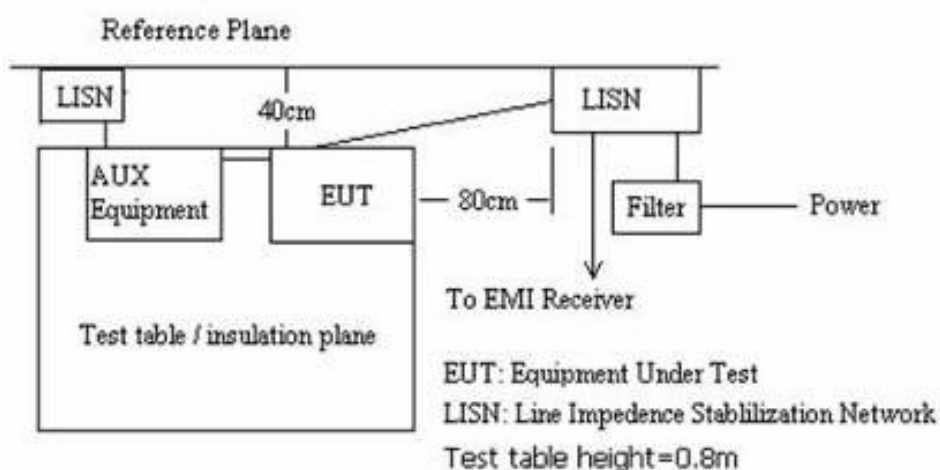
Test Requirement: Part 15.207
 Test Method: ANSI C63.4.
 Test Date: Aug 14, 2009
 Frequency Range: 150KHz to 30MHz
 Detector: Peak for pre-scan (9kHz Resolution Bandwidth)
 Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

EUT Operation:

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Plan View of Test Setup



Limit:

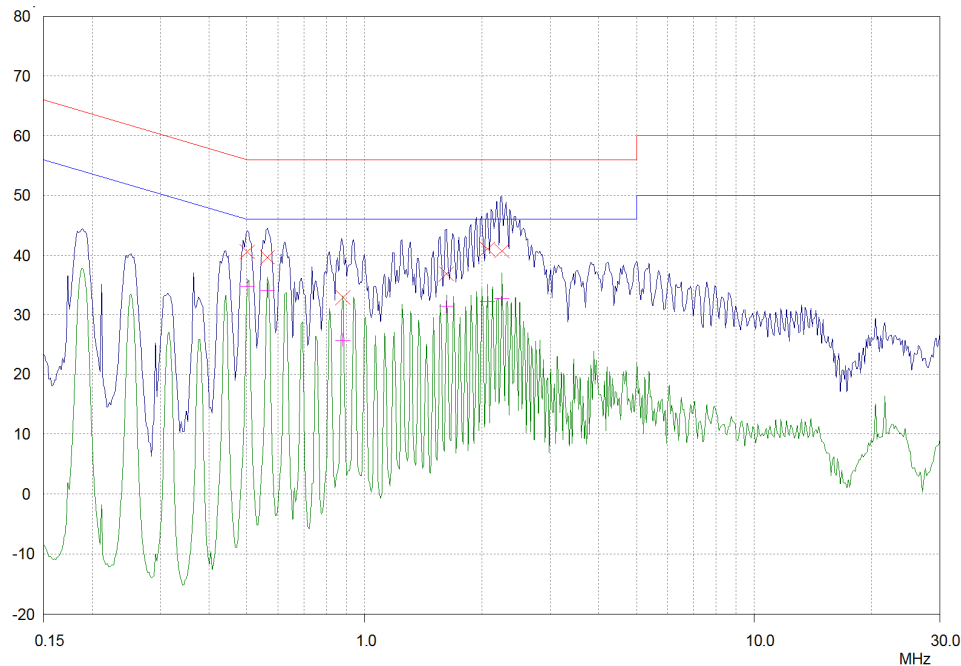
Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		



Operating mode: 1900 Link

Live Line:

dBuV



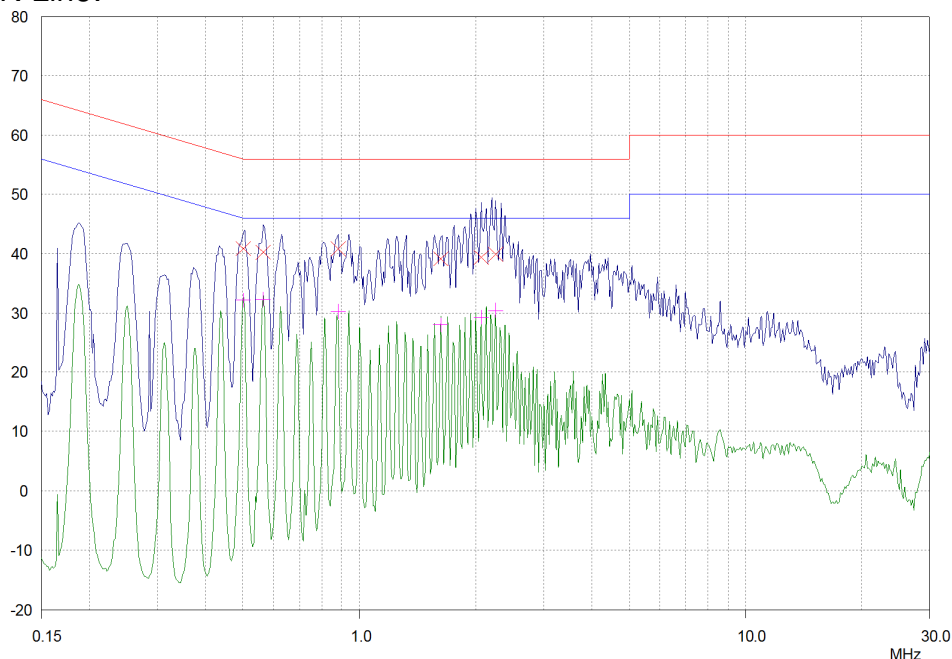
Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB
0.49961	40.58	56.01	15.43
0.56304	39.60	56.00	16.40
0.87968	32.91	56.00	23.09
1.62476	36.83	56.00	19.17
2.0635	41.03	56.00	14.97
2.25253	40.69	56.00	15.31

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB
0.49961	34.78	46.01	11.23
0.56304	34.08	46.00	11.92
0.87968	25.71	46.00	20.29
1.62476	31.45	46.00	14.55
2.0635	32.30	46.00	13.70
2.25253	32.71	46.00	13.29



Operating mode: 1900 Link

N Line:



Frequency MHz	QP Level dBμV	QP Limit dBμV	QP Delta dB
0.49961	40.87	56.01	15.14
0.56304	40.23	56.00	15.77
0.87968	40.82	56.00	15.18
1.62476	39.15	56.00	16.85
2.0635	39.38	56.00	16.62
2.25253	39.94	56.00	16.06

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB
0.49961	32.17	46.01	13.84
0.56304	32.27	46.00	13.73
0.87968	30.24	46.00	15.76
1.62476	28.02	46.00	17.98
2.0635	29.24	46.00	16.76
2.25253	30.40	46.00	15.60

7 Photographs

7.1 Radiated Spurious Emission Test Setup



7.2 Conducted Emission Test Setup





APPENDIX PHOTOGRAPHS OF EUT

All of EUT



Top View of EUT



Bottom View of EUT-1



Side View of EUT-2





Side View of EUT-3



Side View of EUT-4





Side View of EUT-5



Adapter



Battery



Open View of EUT-1



Open View of EUT-2



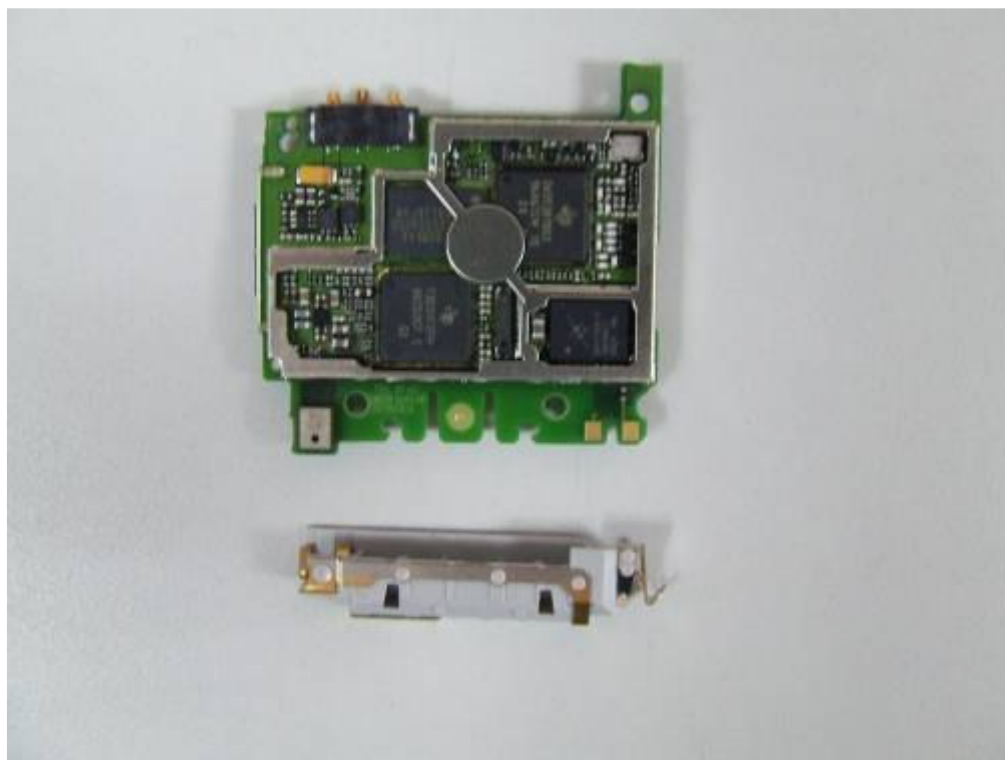
Open View of EUT-3



Internal of EUT-1



Internal of EUT-2



Internal of EUT-3



Internal of EUT-4



~End of Report~