FCC Test Report

FCC 47 CFR FCC Part 15 Subpart B

Product Name	:	GSM/WCDMA MOBILE PHONE
Model No.	:	M4 SS1010
FCC ID	:	CLNSS1010

Prepared By:	:	IAC Compliance Laboratory
Address:	:	No.789 Pu Xing Road,Shanghai,PRC
Date of Receipt	:	2013.03.06
Date of Test	:	2013.03.07-2013.03.11
Report No.	:	20130306FCC-A

Test Report Certification

Date of Issue : Mar.13.2013

Report No. : 20130306FCC-A

Product Name	: GSM/WCDMA MOBILE PHONE
Model No.	: M4 SS1010
Trade Name	: M4
Applicant	: MFOURTEL MEXICO S.A. DE C.V.
Address	: Montecito 38, Piso 23, Oficina 15. Colonia Nápoles. C.P. 03810 Mexico
Standard	: FCC 47 CFR FCC Part 15 Subpart B
Classification	: JBP
Test Result	: Complied

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of IAC Compliance Laboratory

Documented By : _____, Mar.13.2013
Judy Ge/Engineer

Tested By : _____, Mar.13.2013
Alice Lee/Engineer

Approved By : _____, Mar.13.2013
Jeff Huang/Director of Operations

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.2	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 6 dB
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 6dB

1. GENERAL INFORMATION

1.1 Applicant

Company Name: MFOURTEL MEXICO S.A. DE C.V.

Address: Montecito 38, Piso 23, Oficina 15. Colonia Nápoles. C.P. 03810 Mexico

1.2 Manufacturer

Company Name: CK Telecom Limited

Address: Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM/WCDMA MOBILE PHONE
Brand Name	M4
Model Name	M4 SS1010
FCC ID	CLNSS1010
HW Version	BONFIRE-V1.0
SW Version	M4TEL_SS1010_S01_Ver200

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of JBP.
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of thefollowing standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1 Test Modes

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

Test Item	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook

Test Item	Function Type
RadiatedEmissions < 1GHz	Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook

Test Item	Function Type
RadiatedEmissions > 1GHz	Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook

2.2 Testing Environment

Items	Ambient Temperature	Relative Humidity	Test Distance
Normal Condition	22~24℃	35~60%	3m

3. Test Result

3.1 Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

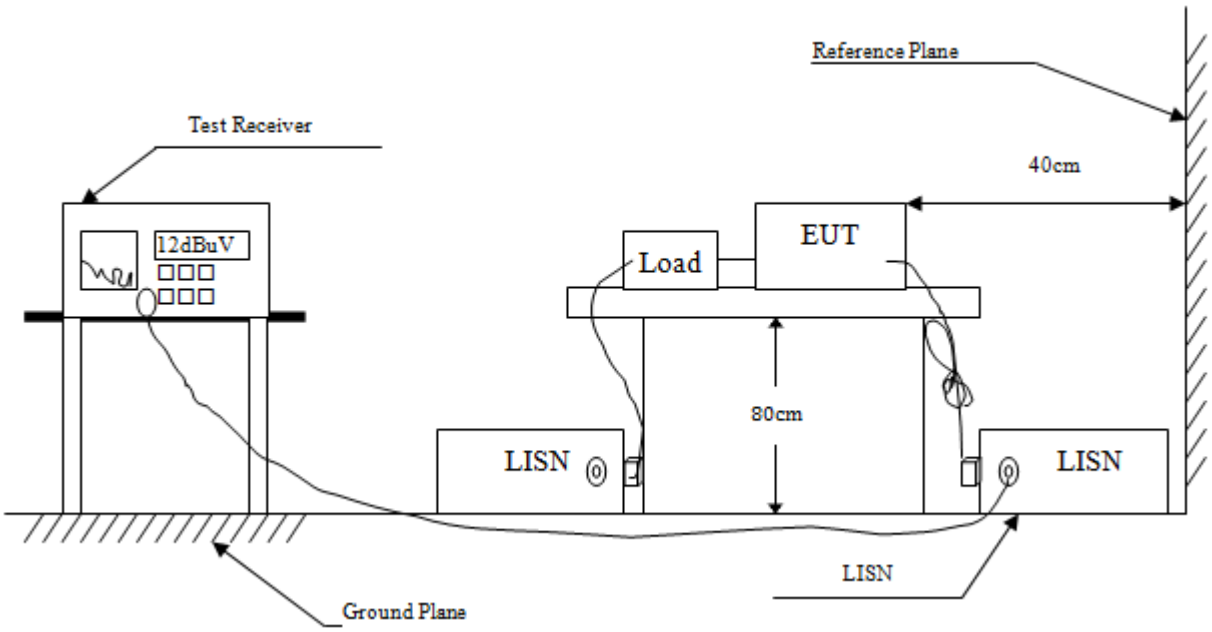
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (RBW=9kHz and VBW=30kHz) with Maximum Hold Mode for QP limit measurement.
9. Set the test-receiver system to Average Detect Function and specified bandwidth (RBW=9kHz and VBW=30kHz) with Maximum Hold Mode for QP limit measurement.

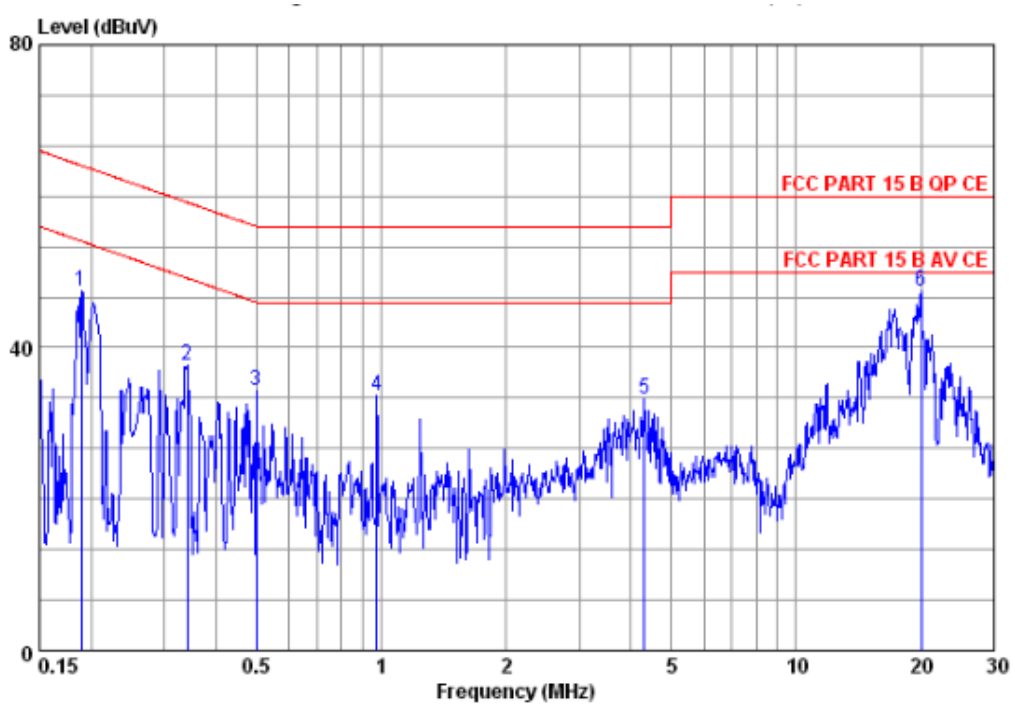
3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Test Voltage:120V/60Hz

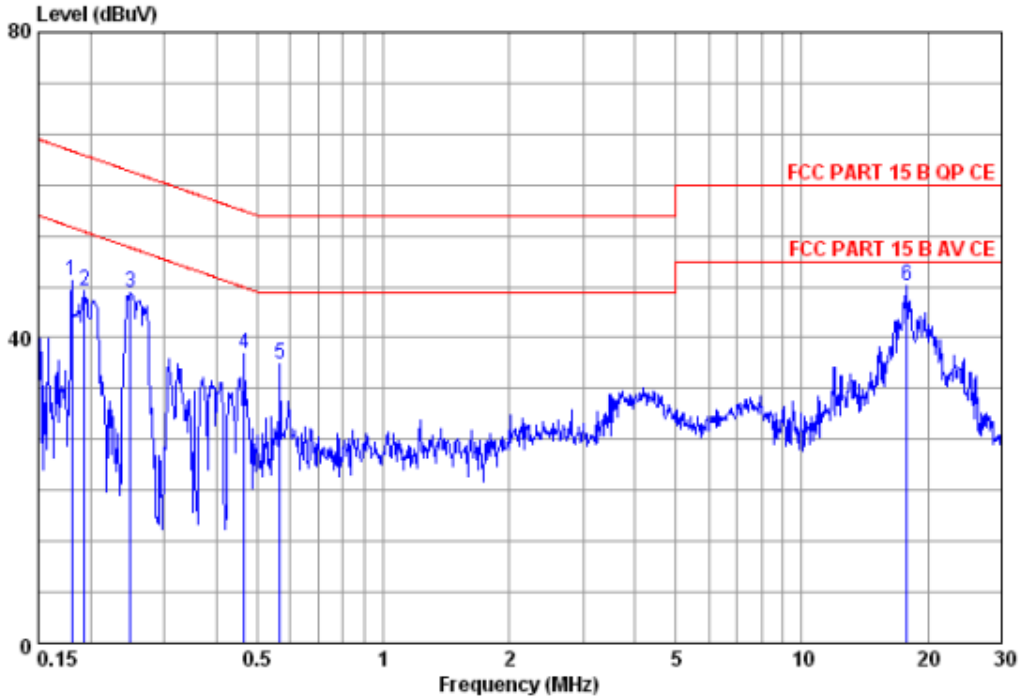
Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter +Neutral



Site : 966 CHAMBER
Condition : FCC PART 15 B QP CE ENV216 NEW NEUTRAL
: RBW:9.000KHz VBW:30.000KHz SWT:0.100sec
eut : phone M4 SS1010
mode : 850 IDLE+BT IDLE+LCD + NT
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	0.19	10.05	47.46	37.40	0.00	0.01	64.06	-16.60	101	0	Peak
2	0.34	9.94	37.68	27.72	0.00	0.02	59.18	-21.50	101	0	Peak
3	0.50	9.76	34.42	24.64	0.00	0.02	56.01	-21.59	101	0	Peak
4	0.97	9.69	33.64	23.93	0.00	0.02	56.00	-22.36	101	0	Peak
5	4.31	9.65	33.25	23.56	0.00	0.04	56.00	-22.75	101	0	Peak
6	20.06	9.97	47.41	37.36	0.00	0.08	60.00	-12.59	101	0	Peak

Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter + Line



Site : 966 CHAMBER
Condition : FCC PART 15 B QP CE ENV216 NEW LINE
: RBW:9.000KHz VBW:30.000KHz SWT:0.100sec
eut : phone M4 SS1010
mode : 850 IDLE+BT IDLE+LCD + NT
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	0.18	9.54	47.47	37.92	0.00	0.01	64.46	-16.99	101	0	Peak
2	0.19	9.60	46.09	36.48	0.00	0.01	63.89	-17.80	101	0	Peak
3	0.25	9.64	46.00	36.34	0.00	0.02	61.78	-15.78	101	0	Peak
4	0.47	9.68	37.94	28.24	0.00	0.02	56.58	-18.64	101	0	Peak
5	0.57	9.69	36.45	26.74	0.00	0.02	56.00	-19.55	101	0	Peak
6	17.85	9.86	46.75	36.73	0.00	0.16	60.00	-13.25	101	0	Peak

3.2 Test of Radiated Emission Measurement

3.2.1 Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

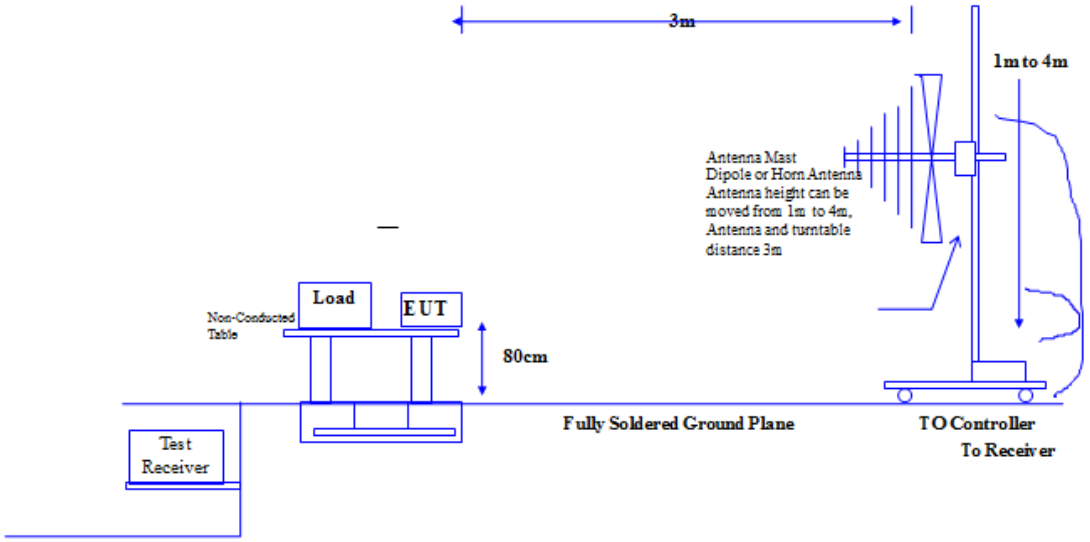
See list of measuring instruments of this test report.

3.2.3 Test Procedure

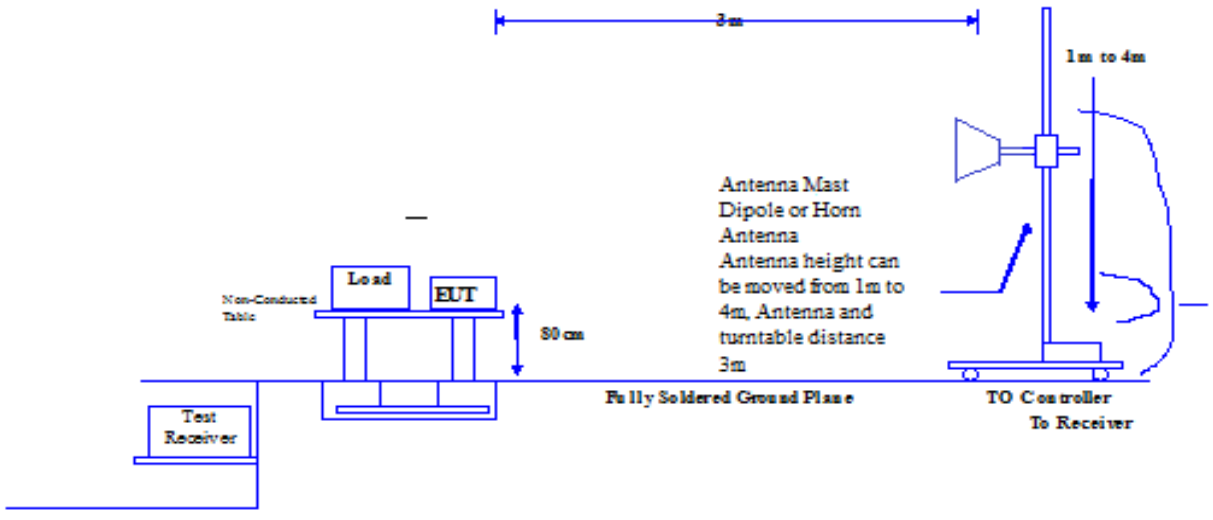
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth (RBW=120kHz and VBW=300kHz with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4 Test Setup

30MHz~1GHz



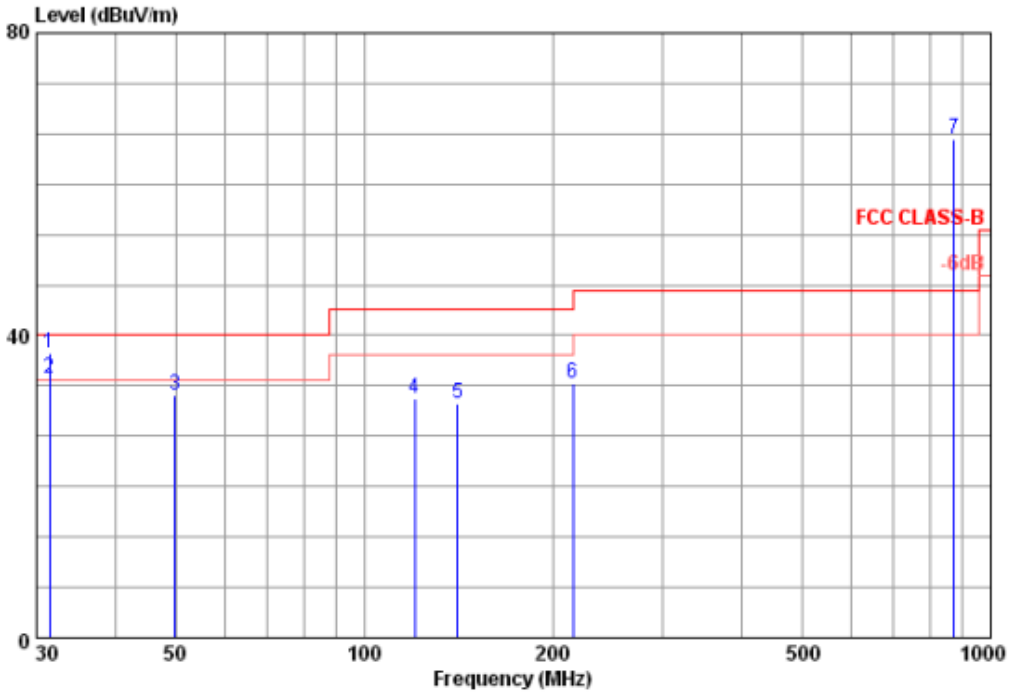
Above 1GHz



3.2.5 Test Result of Radiated Emission

Test Distance : 3m

Mode1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter –Vertical

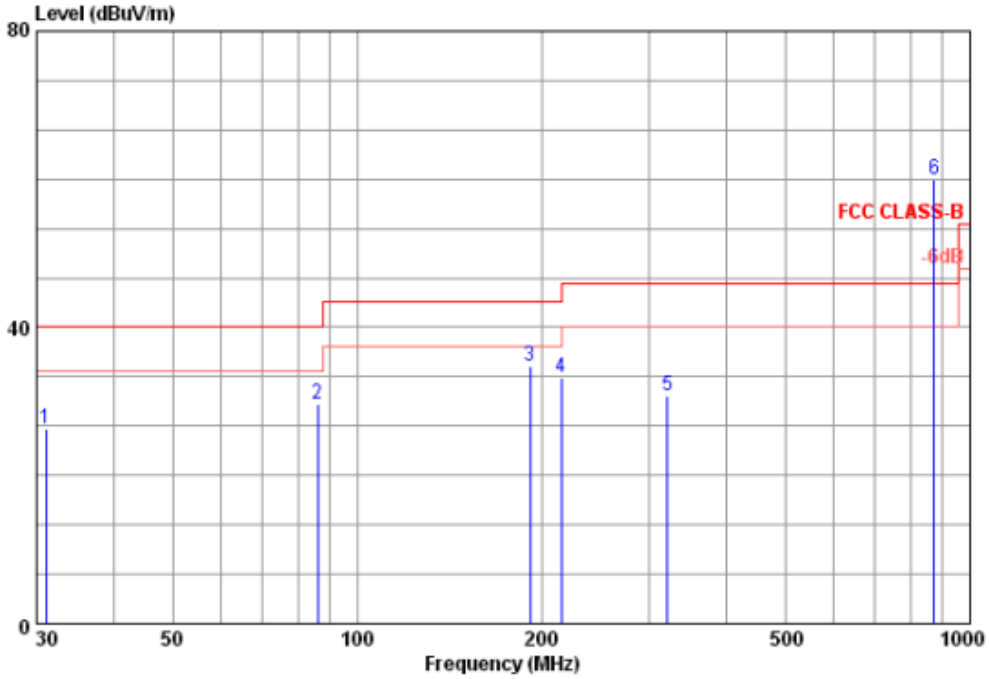


Site : 966 CHAMBER
Condition : FCC CLASS-B 3m 2011 HL562 VERTICAL
: RBW:100.000KHz VBW:300.000KHz SWT:Auto
eut : phone M4 SS1010
mode : 850 IDLE+BT IDLE+LCD + NT
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	31.51	18.33	37.69	45.38	27.22	1.20	40.00	-2.31	200	0	Peak
2	31.51	18.33	34.21	41.90	27.22	1.20	40.00	-5.79	104	280	QP
3	49.88	7.93	32.05	50.08	27.11	1.15	40.00	-7.95	200	0	Peak
4	120.28	9.58	31.62	47.55	27.22	1.71	43.50	-11.88	200	0	Peak
5	140.84	7.99	30.95	47.99	26.90	1.87	43.50	-12.55	200	0	Peak
6	215.27	8.03	33.59	49.68	26.43	2.31	43.50	-9.91	200	0	Peak
7	875.25	20.32	65.99	68.12	27.39	4.94	46.00	19.99	200	0	Peak

Remark: #7 is communication signal which can be ignored.

Mode1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter –Horizontal



Site : 966 CHAMBER
Condition : FCC CLASS-B 3m 2011 HL562 HORIZONTAL
: RBW:100.000KHz VBW:300.000KHz SWT:Auto
eut : phone M4 SS1010
mode : 850 IDLE+BT IDLE+LCD + NT
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	31.07	18.57	26.19	33.74	27.24	1.12	40.00	-13.81	200	0	Peak
2	86.20	8.55	29.62	46.87	27.54	1.74	40.00	-10.38	200	0	Peak
3	191.75	7.25	34.65	51.77	26.69	2.32	43.50	-8.85	200	0	Peak
4	215.27	8.03	33.24	49.33	26.43	2.31	43.50	-10.26	200	0	Peak
5	321.06	11.63	30.85	42.37	26.12	2.97	46.00	-15.15	200	0	Peak
6	875.25	20.32	59.99	62.12	27.39	4.94	46.00	13.99	200	0	Peak

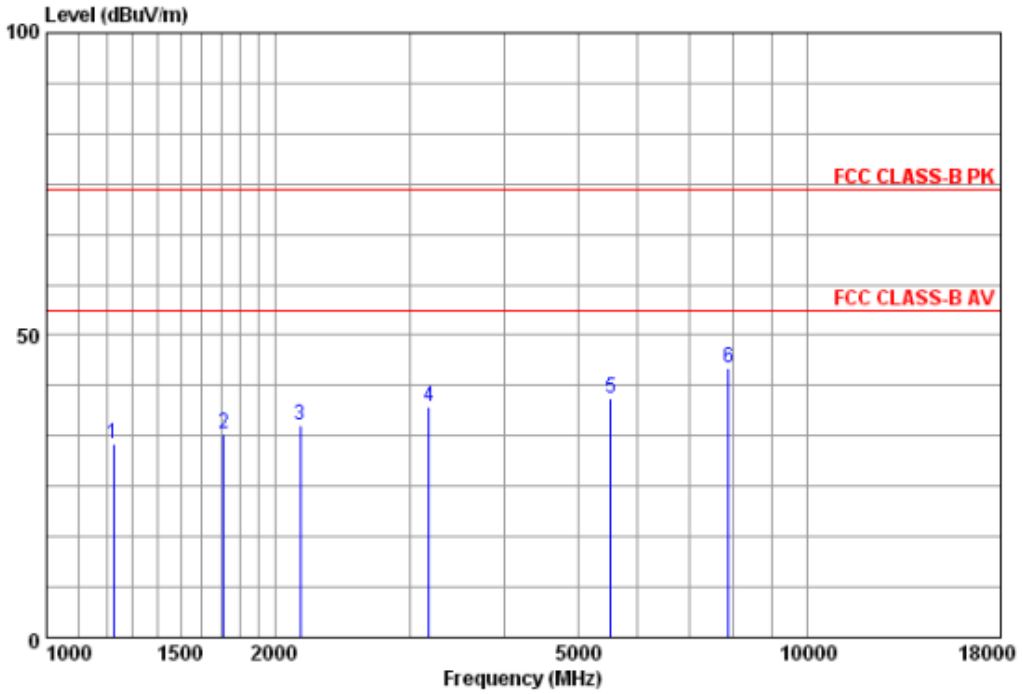
Remark: #6 is communication signal which can be ignored.

Radiated Emission above 1GHz

Test Distance : 3m

Mode1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter -Vertical

1GHz~18GHz

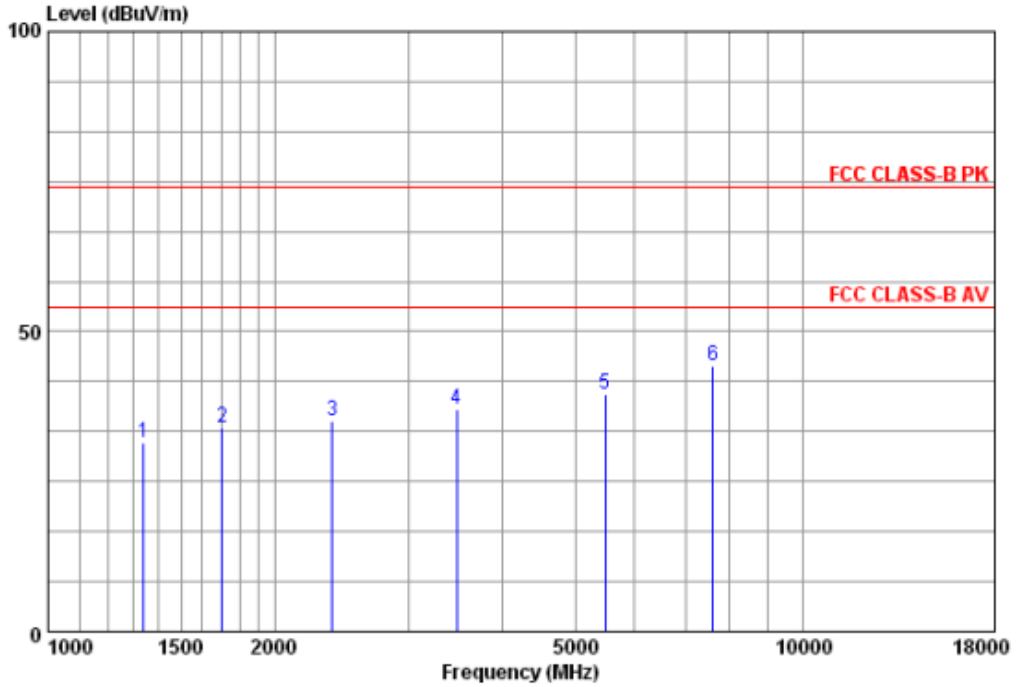


Site : 966 CHAMBER
Condition : FCC CLASS-B PK 3m HF906 VERTICAL
: RBW:1000.000KHz VBW:1000.000KHz SWT:Auto
ent : GSM MOBILE PHONE
mode : GSM850+Bluetooth Idle+LCD +NT+Ecarphone
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	1224.25	24.09	31.97	49.41	45.93	4.40	74.00	-42.03	200	0	Peak
2	1711.91	25.84	33.73	47.63	45.08	5.34	74.00	-40.27	200	0	Peak
3	2157.26	27.27	35.03	46.35	44.78	6.19	74.00	-38.97	200	0	Peak
4	3186.87	29.72	38.17	45.22	44.64	7.87	74.00	-35.83	200	0	Peak
5	5519.07	33.52	39.64	39.03	43.31	10.40	74.00	-34.36	200	0	Peak
6	7898.05	35.52	44.64	39.19	42.80	12.73	74.00	-29.36	200	0	Peak

Mode 1: GSM 850 Idle + Bluetooth Idle + WiFi Idle + Battery + Earphone + LCD monitor + Notebook+ Adapter -Horizontal

1GHz~18GHz



Site : *966 CHAMBER*
Condition : *FCC CLASS-B PK 3m HP906 HORIZONTAL*
: *RBW:1000.000KHz VBW:1000.000KHz SWT:Auto*
eut : *GSM MOBILE PHONE*
mode : *GSM850+Bluetooth Idle+LCD +NT+Earphone*
memo :

	Freq	Antenna Factor	Level	Read Level	Preamp Factor	Cable Loss	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dB/m	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1	1339.01	24.46	31.50	48.11	45.66	4.59	74.00	-42.50	200	0	Peak
2	1702.04	25.77	34.06	48.08	45.10	5.31	74.00	-39.94	200	0	Peak
3	2380.03	27.55	35.03	45.89	45.08	6.67	74.00	-38.97	200	0	Peak
4	3485.60	30.65	37.11	42.79	44.22	7.89	74.00	-36.89	200	0	Peak
5	5487.26	33.48	39.42	38.91	43.31	10.34	74.00	-34.58	200	0	Peak
6	7606.79	35.58	44.31	38.76	42.51	12.48	74.00	-29.69	200	0	Peak

4. List of Measuring Equipment

No	Instrument/Ancillary	Provider	Type/Model	Cal. Date
01	Base Station	R&S	CMU200	2012.12.08
02	Spectrum Analyzer	R&S	FSP30(9kHz~30GHz)	2012.07.19
03	Antenna	R&S	HL562 (30M-1G)	2012.11.09
04	Loop Antenna	Schwarzbeck	FMZB1516(9KHz~30MHz)	2013.02.03
05	Antenna	R&S	HF906(1G-18G)	2012.08.02
06	Antenna	Schwarzbeck	BBHA 9170 (15G-26.5G)	2012.11.09
07	High Pass Filter	R&S	System Integrated	2012.11.14
08	Thermal chamber	Hitachi	EC- 85MHP	2012.12.25
09	Pre-Amplifier	Agilent	83006A(0.01GHz-26.5GHz)	2012.08.06
10	Pre-Amplifier	Agilent	83006A(0.01GHz-26.5GHz)	2012.08.06
11	Helical Antenna	ETS	3102 (1G-10G)	NCR
12	Power Meter	R&S	NRP(10MHz~8GHz)	2012.12.05
13	Relay Switch	R&S	TS-REMI	NCR
14	Signal Generator	R&S	SMR20(10MHz-20 GHz)	2012.12.08
15	LISN	ROHDE&SCHWARZ	ENV216 TWO-LINE V-NETWORK	2012.11.13
16	Power Meter	Agilent	E4418B (EPM Series)	2012.12.08
17	Power Sensor	Agilent	E4412A (E-series CW)	

5 Ancillary Equipment List

Product	Manufacturer	Model No.	Serial No.	FCC approval	Power Cord
Notebook PC	Toshiba	PSAGCT-0 K501P	59162409Q	FCC DOC	N/A
Adapter (NB)	Toshiba	PA-1750-0 9	PA3468E1AC3	FCC DOC	M/N A-1750-09 PA -1750-09
LCD Monitor	HP	GTM002	3CQ84343SG	FCC DOC	Unshielded 1.8m
Bluetooth headset	acer	S100FBT	N/A	HLZDMS100FBT	N/A
Wlan AP	D-Link	DWL-2000 AP+A	B2D31610028 56	KA2DWLG700APB1	AC: I/P: Unshielded 1.8m DC:O/P: Unshielded 1.8m

6 Uncertainty Evaluation

6.1 Ucertainty of Radiated Spurious Emission evaluation (30MHz~1GHz)

Radiated Spurious Emission Measurement Uncertainty Evaluation					
Contribution		Probability Distribution	Partition Coefficient	u(xi)	
				Horizontal 30-1000MHz	Vertical 30-1000MHz
Cable Loss Calibration	U_{01}	U-Shape	1.41	0.16	0.16
Sine wave voltage accuracy of Spectrum analyzer	U02	Triangle	2.45	0.82	0.82
Impulse response of spectrum analyzer	U03	Triangle	2.45	0.61	0.61
Pulse repetition rate of spectrum analyzer	U04	Triangle	2.45	0.61	0.61
Spectrum analyzer noise level	U05	Normal	2.00	0.25	0.25
Measurement of the signal path mismatch	U06	U-Shape	1.41	0.28	0.28
Free-space antenna factor	U07	Normal	2.00	0.70	0.70
Antenna Factor Interpolation for Frequency	U08	Rectangular	1.73	0.17	0.17
Antenna factor with height in the correlation	U09	Rectangular	1.73	0.17	0.17
Measurementantennaand theabsorbingmaterialintheimageof themutualcoupling effect	U10	Rectangular	1.73	0.58	0.58
Antenna phase center variation	U11	Rectangular	1.73	0.13	0.13
Antenna cross polarization response	U12	Rectangular	1.73	0.52	0.52
Antenna imbalance	U13	Rectangular	1.73	0.52	0.52
Test distance error	U14	Rectangular	2.45	1.02	1.22
Desktop terrain clearance variation	U15	Normal	1.73	0.17	0.17
Random uncertainty	U16	Standard deviation	2.00	0.05	0.05
Pre-Amplifier gain Calibration	U17	U-Shape	1.00	0.10	0.11
Combined Standard Uncertainty Uc(y)	Uc	Normal	1.00	2.03	2.14
Measuring Uncertainty for a level of Confidence of 95%(U= 2Uc(y))	U=kUc	Normal	k	4.05	4.28

6.2 Ucertainty of Radiated Spurious Emissionevaluation (1GHz~26.5GHz)

Radiated Spurious Emission Measurement Uncertainty Evaluation					
Contribution		Probability Distribution	Partition Coefficient	u(xi)	
				Horizontal 1-26.5GHz	Vertical 1-26.5GHz
Cable Loss Calibration	U01	U-Shape	2.00	0.04	0.04
Sine wave voltage accuracy of Spectrum analyzer	U02	Triangle	2.45	0.82	0.82
Impulse response of spectrum analyzer	U03	Triangle	2.45	0.61	0.61
Pulse repetition rate of spectrum analyzer	U04	Triangle	2.45	0.61	0.61
Spectrum analyzer noise level	U05	Normal	2.00	0.25	0.25
Measurement of the signal path mismatch	U06	U-Shape	1.41	0.69	0.69
Free-space antenna factor	U07	Normal	2.00	0.50	0.50
Antenna Factor Interpolation for Frequency	U08	Rectangular	1.73	0.17	0.17
Antenna factor with height in the correlation	U09	Rectangular	1.73	NA	NA
Measurementantennaand theabsorbingmaterialintheimageof themutualcoupling effect	U10	Rectangular	1.73	0.58	0.58
Antenna phase center variation	U11	Rectangular	1.73	0.13	0.13
Antenna cross polarization response	U12	Rectangular	1.73	0.52	0.52
Antenna imbalance	U13	Rectangular	1.73	0.52	0.52
Test distance error	U14	Rectangular	2.45	2.36	2.36
Desktop terrain clearance variation	U15	Normal	1.73	0.17	0.17
Random uncertainty	U16	Standard deviation	2.00	0.05	0.05
Pre-Amplifier gain Calibration	U17	U-Shape	1.00	0.09	0.10
Combined Standard Uncertainty Uc(y)	Uc	Normal	1.00	2.95	2.96
Measuring Uncertainty for a level of Confidence of 95%(U= 2Uc(y))	U=kUc	Normal	k	5.91	5.92