

47 CFR PART 15B

TEST REPORT

of

CDMA 1X digital mobile phone

Model Name: HC-C2100

Brand Name: Haier

Report No.: SZ07030070E02

FCC ID: SG70704HC-C2100

prepared for

Qingdao Haier Telecom Co., Ltd.

No.1, Haier Road, Hi-tech Zone,
Qingdao, 266101, P.R.China

prepared by
Shenzhen Electronic Product Quality Testing Center

Morlab Laboratory

3/F, Electronic Testing Building, Shahe Road, Xili,
Nanshan District, Shenzhen, 518055 P. R. China

Tel: +86 755 86130398

Fax: +86 755 86130218



NOTE: This test report can be duplicated completely for the legal use with the approval of the applicant; it shall not be reproduced except in full, without the written approval of Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. Any objections should be raised to us within thirty workdays since the date of issue.



TABLE OF CONTENTS

1.	TEST CERTIFICATION.....	3
2.	GENERAL INFORMATION	4
2.1	Test Sample Information.....	4
2.2	Test Standards and Results	6
2.3	Facilities and Accreditations.....	7
2.3.1	Facilities	7
2.3.2	Test Environment Conditions.....	7
3.	47 CFR PART 15B REQUIREMENT	8
3.1	Test Modes.....	8
3.2	Conducted Emissions	9
3.2.1	Requirement	9
3.2.2	Test Procedure	9
3.2.3	Test Setup	9
3.2.4	Test Result.....	10
3.3	Radiated Emissions.....	13
3.3.1	Requirement	13
3.3.2	Test Procedure	13
3.3.3	Test Setup	13
3.3.4	Test Result.....	14

1. TEST CERTIFICATION

Equipment under Test: CDMA 1X digital mobile phone

Application Type: Certification

FCC ID: SG70704HC-C2100

Model Name: HC-C2100

Brand Name: Haier

Applicant Information: Qingdao Haier Telecom Co., Ltd.

Address: No.1, Haier Road, Hi-tech Zone, Qingdao, 266101,
P. R. China

Contact: Mr. Xu Jun

Tel.: +86(532)88936513

Fax: +86(532)88936513

E-mail: txkfrzh@haier.com

Test Standards: 47 CFR Part 15B

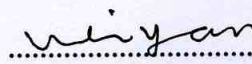
Test Date(s): April 17, 2007 - April 24, 2007

Test Result: PASS

* We Hereby Certify That:

The equipment was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test results of this report only apply for the sample equipment identified above. The test data, data evaluation, test procedures and equipment configurations shown in this report were made according to the requirements of related FCC rules. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

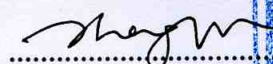
Tested by:


Wei Yanquan

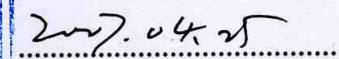
Dated:


2007.04.25


Reviewed by:


Zhang Weimin

Dated:


2007.04.25

Approved by:


Shu Luan

Dated:


2007.04.25



2. GENERAL INFORMATION

2.1 Test Sample Information

For the test sample received from/supplied by the applicant, we summarized as below:

1. Equipment under Test (EUT)

EUT Description.....: CDMA 1X digital mobile phone
Model Name.....: HC-C2100
Manufacturer.....: Qingdao Haier Telecom Co., Ltd.
No.1, Haier Road, Hi-tech Zone, Qingdao, 266101, P.R.China
Serial No.....: C21000702100111
ESN.....: 0x2F6067C0
Hardware Version.....: P3.2
Software Version.....: QC.10.1.4.1.008.0.0
Power Supply.....: Battery
Model Name: C2100
Brand Name: Haier
Manufacturer: Shenzhen XWODA Electronic Co. Ltd.
Serial No.: (n.a., marked #1 by test site)
Capacitance: 800mAh
Rated Voltage: 3.7VDC

2. Ancillary Equipments (AE)

AE-1.....: USB Cable
Model Name: (n.a.)
Brand Name: (n.a.)
Manufacturer: (n.a.)
Serial No.: (n.a., marked #1 by test site)
Wire Length: 95cm

3. Test Sample Configuration

The Test Sample (EUT) is classified as a "Class B digital device".

According to the declaration and/or specification and/or user's manual supplied by the applicant and/or manufacturer, the EUT includes following outfits (ports):

- a) A mini-USB port, shared with the d.c. power supply input port, which can be connected to the USB port of external equipments e.g. a Personal Computer (PC) via the "AE-1: USB Cable" supplied by applicant and other ones if applicable.

For more detailed description about the Test Sample (EUT), please refer to specification or user's manual supplied by the applicant and/or manufacturer.



2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 for the FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result	Date of Test
1	15.107	Conducted Emissions	PASS	2007-4-17
2	15.109	Radiated Emissions	PASS	2007-4-23

2.3 Facilities and Accreditations

2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Board for Laboratories (CNAL) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 CHINA. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

2.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	20 - 25
Relative Humidity (%):	40 - 60
Atmospheric Pressure (kPa):	960

3. 47 CFR PART 15B REQUIREMENT

3.1 Test Modes

According to the description of Test Sample Configuration in section 2.1 of this test report, several test modes are employed to perform tests as below for the actual application:

1. USB Test Mode

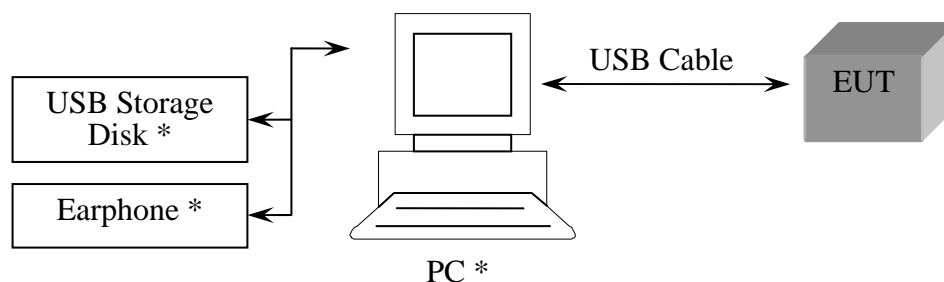
The Test Sample (EUT) operates as a peripheral equipment of the PC.

The EUT, allocated a traffic channel, operates on the middle channel of the Cellular 850MHz band under the condition of its maximum output power.

The USB Cable (AE-1), connected to the PC and the EUT, is used to supply the power for the EUT as well as to charge the Battery of the EUT.

The PC as host is also configured with other peripheral equipments connected to it for a minimum of two different types of available I/O protocols, here a USB Storage Disk for the USB I/O protocol and a Earphone for the Audio I/O protocol are employed; The PC is powered by 120V 60Hz AC mains supply.

The figure below is the test configuration for the Test Sample (EUT) employed in this test report under this test mode (note: * indicates the equipments supplied by test site):



3.2 Conducted Emissions

3.2.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50Ohm line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-Peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range from 0.15MHz to 0.50MHz.

3.2.2 Test Procedure

- The test frequency range is from 150kHz to 30MHz.
- The Peak (PK) detector is employed to sweep the conducted interference over the test frequency range.
- For the swept signals that are more than or have narrow negative margins beyond the Average (AV) and Quasi-peak (QP) limit lines, the AV and QP detectors are employed to measure these suspect signals to find their maximum QP and AV readings.
- Both L Phase and N Phase lines of the power mains connected to the Test Sample (EUT) are employed to perform this test.
- All Test Modes for the Test Sample (EUT) listed in section 3.1 are employed to perform this test.

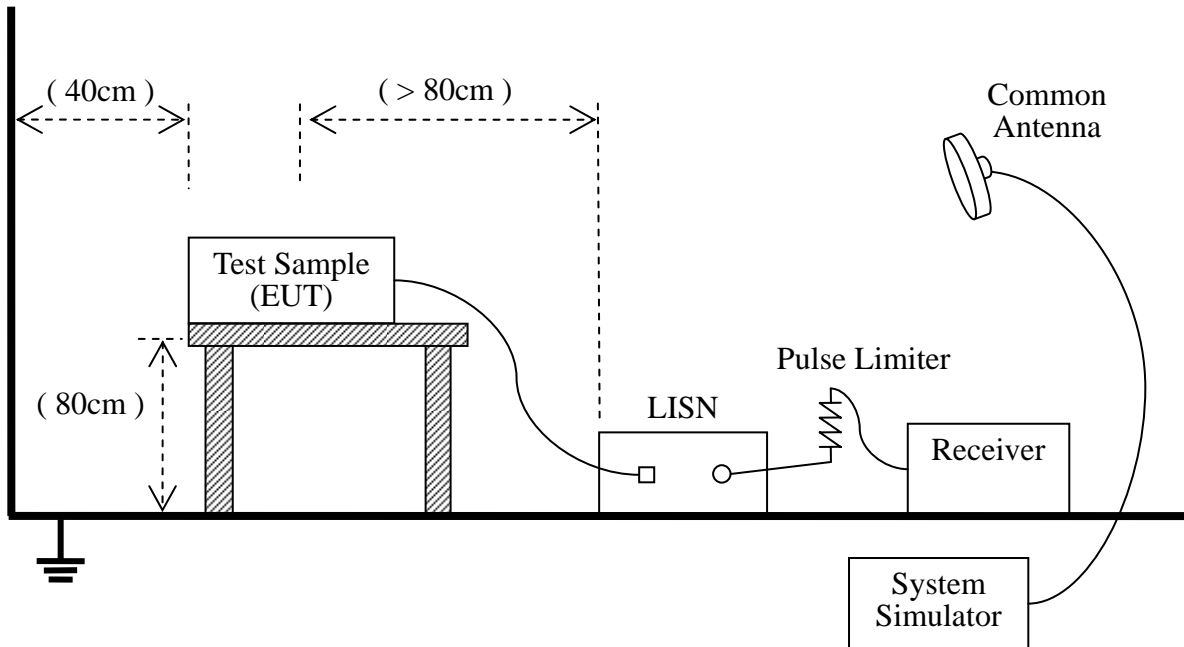
3.2.3 Test Setup

1. Test Setup Sketch

The Test Sample (EUT) is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The Test Sample (EUT) is connected to the power mains through a LISN which provides 50 μ H/50Ohm of coupling

impedance for the measuring instrument of a Receiver. A Pulse Limiter is employed to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The Test Sample (EUT) works together with a System Simulator via a Common Antenna.



2. Equipments List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Receiver	Agilent	E7405A	US44210471	2006.07	1year
LISN	Schwarzbeck	NSLK 8127	812744	2006.08	1year
Pulse Limiter (20dB)	Schwarzbeck	VTSD 9561-D	9391	(n.a.)	(n.a.)
System Simulator	Agilent	E5515C	GB43130131	2006.06	1year
Common Antenna	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
PC	HP	Pavilion ze2202	CNF5460DNL	(n.a.)	(n.a.)
USB Storage Disk	DEC	256MB	(n.a.)	(n.a.)	(n.a.)
Earphone	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)

3.2.4 Test Result

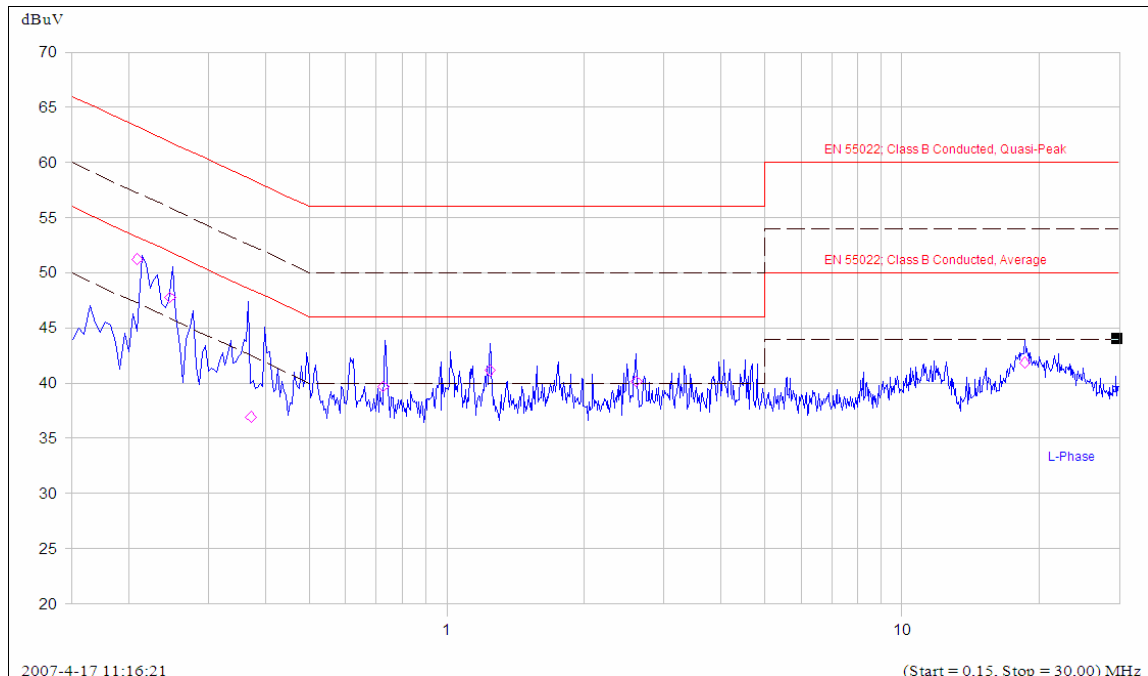
1. USB Test Mode

a) Test Verdict Recorded for Suspect Points

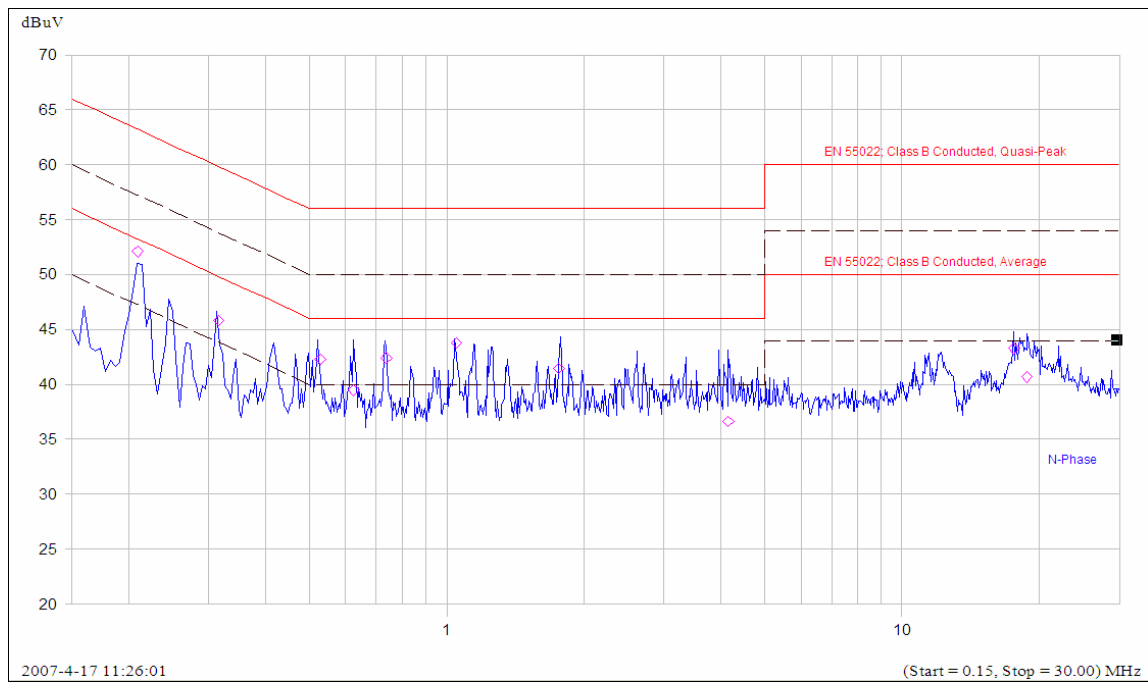
No.	@Frequency (MHz)	Suspect Emission Levels (dBμV)				Limit (dBμV)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.209	51.2	43.4	34.1	L	63.2	53.2	PASS

No.	@Frequency (MHz)	Suspect Emission Levels (dB μ V)				Limit (dB μ V)		Verdict
		PK	QP	AV	Phase	QP	AV	
2	0.247	47.8	44.9	39.8	L	61.9	51.9	PASS
3	0.371	36.9	32.9	26.8	L	58.5	48.5	PASS
4	0.726	39.7	35.6	29.4	L	56.0	46.0	PASS
5	1.244	41.1	37.2	31.1	L	56.0	46.0	PASS
6	2.612	40.2	35.7	28.8	L	56.0	46.0	PASS
7	18.605	41.8	35.3	29.3	L	60.0	50.0	PASS
8	0.209	52.1	49.7	43.7	N	63.3	53.3	PASS
9	0.316	45.8	42.9	37.7	N	59.8	49.8	PASS
10	0.528	42.3	38.8	28.1	N	56.0	46.0	PASS
11	0.624	39.5	35.4	28.4	N	56.0	46.0	PASS
12	0.737	42.4	39.8	35.7	N	56.0	46.0	PASS
13	1.051	43.8	40.9	36.0	N	56.0	46.0	PASS
14	1.765	41.4	36.8	30.6	N	56.0	46.0	PASS
15	4.152	36.6	28.6	21.3	N	56.0	46.0	PASS
16	17.610	43.3	36.5	29.4	N	60.0	50.0	PASS
17	18.819	40.7	36.9	30.1	N	60.0	50.0	PASS

b) Test Plots



(Plot A: L Phase)



(Plot B: N Phase)

3.3 Radiated Emissions

3.3.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

- Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.
- In the emission tables above, the tighter limit applies at the band edges.

3.3.2 Test Procedure

- The test frequency range is from 30MHz to 1GHz.
- The Test Antenna is located at 1m height. The Peak (PK) detector is employed to sweep the radiated interference over the test frequency range while the Turn Table is located separately at the degree of $\text{DEG}_{\text{TT}}(n) = n \cdot 45$, $n \in [0, 8]$.
- For each swept signal that is more than or have narrow negative margins beyond the Quasi-peak (QP) limit line, rotate the Turn Table and vary the Test Antenna height until the emission is at its highest amplitude; then tuned the Receiver and use the QP detector to measure this suspect signal to find its maximum QP reading.
- Both the Vertical (V) and the Horizontal (H) polarizations of the Test Antenna are employed to perform this test.
- All Test Modes for the Test Sample (EUT) listed in section 3.1 are employed to perform this test.

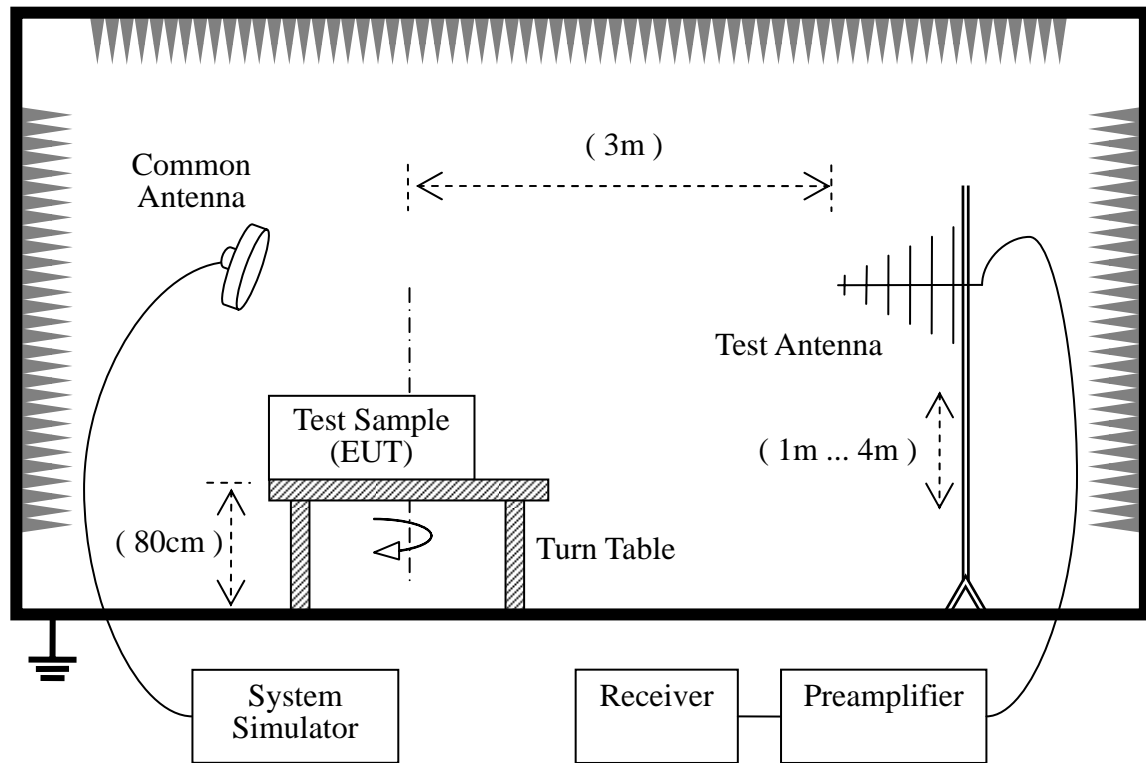
3.3.3 Test Setup

1. Test Setup Sketch

The test is performed in a 3m Semi-Anechoic Chamber. The Test Sample (EUT) is placed on a 0.8m high insulating Turn Table and keeps 3m away from the Test Antenna which is a Bi-Log one with working frequency range from 30MHz to 3GHz and is mounted on a variable-height antenna master

tower. If applicable, a Preamplifier is employed for the measuring instrument of a Receiver. The factors of the whole test system are calibrated to correct the reading.

The Test Sample (EUT) works together with a System Simulator (SS) via a Common Antenna.



2. Equipments List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Receiver	Agilent	E7405A	US44210471	2006.07	1year
Semi-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2006.08	2year
Test Antenna (Bi-Log)	Schwarzbeck	VULB 9163	9163-274	2006.07	1year
System Simulator	Agilent	E5515C	GB43130131	2006.06	1year
Preamplifier	(n.a.)	20dB	(n.a.)	(n.a.)	(n.a.)
Common Antenna	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
PC	HP	Pavilion ze2202	CNF5460DNL	(n.a.)	(n.a.)
USB Storage Disk	DEC	256MB	(n.a.)	(n.a.)	(n.a.)
Earphone	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)

3.3.4 Test Result

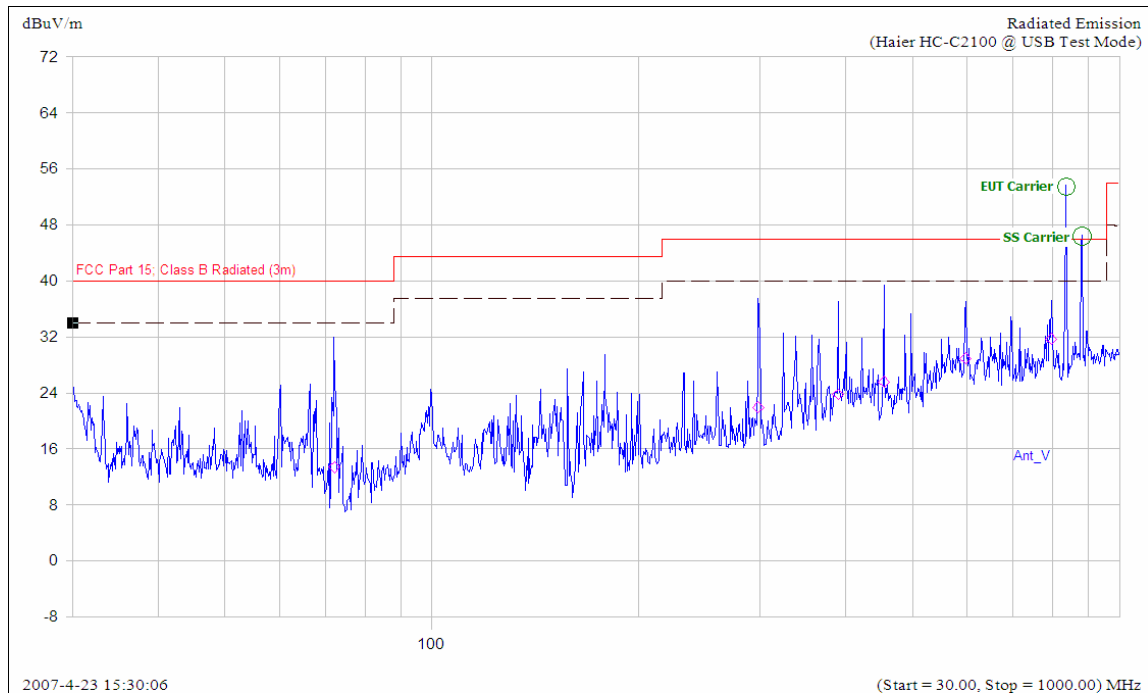
NOTE: the emissions of EUT and SS carrier frequencies should be ignored.

1. USB Test Mode

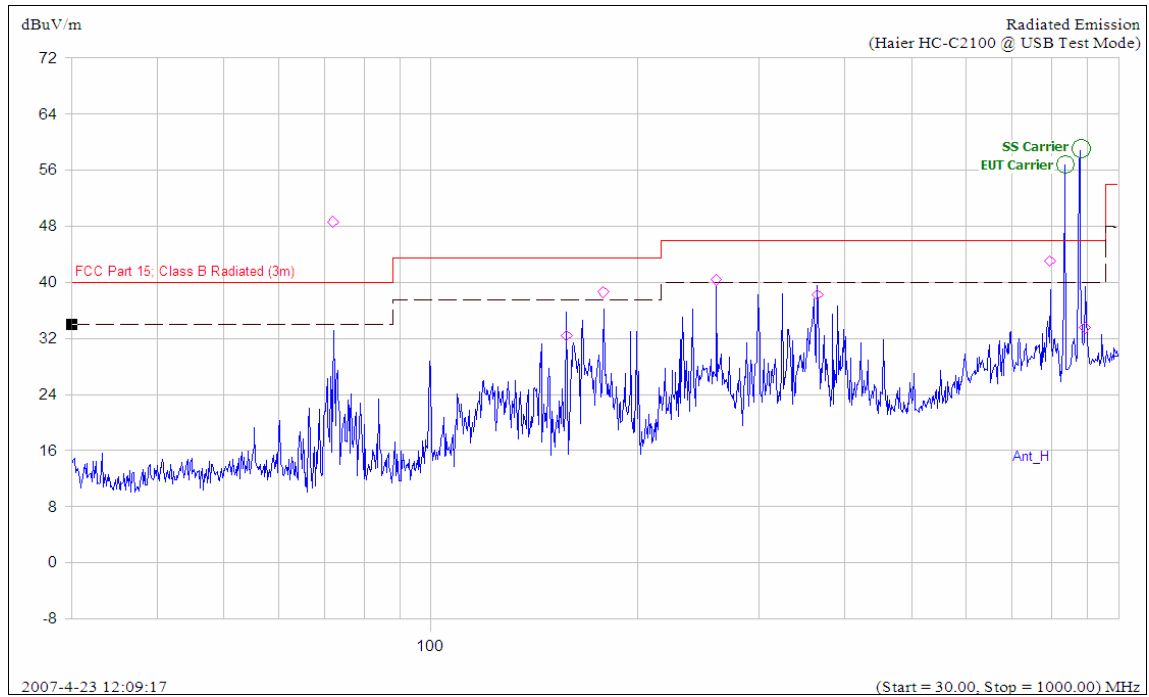
a) Test Verdict Recorded for Suspect Points

No.	@Frequency (MHz)	Suspect Emission Levels (dBμV/m)					QP Limit (dBμV/m)	Result
		PK	QK	Turn Table (degree)	Test Antenna			
					Height (cm)	Polar.		
1	72.103	13.4	7.2	85	248	V	40.0	PASS
2	298.221	21.9	14.3	49	196	V	46.0	PASS
3	389.957	23.8	17.1	311	103	V	46.0	PASS
4	454.748	25.6	18.6	40	119	V	46.0	PASS
5	597.574	28.9	22.6	211	373	V	46.0	PASS
6	796.522	31.7	25.0	121	128	V	46.0	PASS
7	72.019	48.6	37.4	193	400	H	40.0	PASS
8	157.487	32.4	27.6	338	102	H	43.5	PASS
9	178.168	38.6	35.3	319	154	H	43.5	PASS
10	259.924	40.4	37.4	76	103	H	46.0	PASS
11	364.960	38.2	30.3	167	102	H	46.0	PASS
12	795.587	43.0	31.3	58	102	H	46.0	PASS
13	893.936	33.5	27.5	239	240	H	46.0	PASS

b) Test Plots



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

** END OF REPORT **