

47 CFR PART 15B

TEST REPORT

of

10.4" Digital Photo Frame

Model Name: GBE104v2.2

Brand Name: (n.a.)

Report No.: SZ07030014E01

FCC ID: U57070323

prepared for

NSK (Shenzhen) Control Technology Co., Ltd

The 6th Xinsha building, Baishizhou,
Nanshan District, Shenzhen, China

prepared by

Shenzhen Electronic Product Quality Testing Center

Morlab Laboratory

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1. TEST CERTIFICATION

Equipment Under Test: 10.4" Digital Photo Frame

Application Type: Certification

FCC ID: U57070323

Model Name: GBE104v2.2

Brand Name: (n.a.)

Applicant Information: NSK (Shenzhen) Control Technology Co., Ltd

Address: The 6th Xinsha building, Baishizhou, Nanshan
District, Shenzhen, China

Contact: Mr. Jessie

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E-mail: jessie@nskcontrol.com

Test Standards: 47 CFR Part 15B

EUT Received Date: April 2, 2007

Test Date(s): April 3, 2007 - April 5, 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:

Luo Biao

Luo Biao

Dated:

2007.04.05

Reviewed by:

Zhang Weimin

Zhang Weimin

Dated:

2007.04.05

Approved by:

Shu Luan

Shu Luan

Dated:

2007.04.05



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.....: 10.4" Digital Photo Frame
Model Name: GBE104v2.2
Manufacturer: NSK (Shenzhen) Control Technology Co., Ltd
The 6th Xinsha building, Baishizhou, Nanshan District, Shenzhen, China
Serial No.....: SPA730220
Hardware Version: GBE104v2.2
Software Version: GBE104v2.2
Power Supply.....: (See AE-1 below)

2. Ancillary Equipments (AE)

AE-1: AC Adapter
Model Name: CGSW-1202000
Brand Name: (n.a.)
Manufacturer: Chuanggu Industry (Shenzhen) Co., Ltd
Serial No.: (n.a.)
Rated Input: ~ 100-240V, 50-60Hz, 1.0A
Rated Output: = 12V, 2.0A
Wire Length: 150cm
AE-2: Remote Controller
Model Name: GBE104v2.2
Brand Name: (n.a.)
Manufacturer: NSK (Shenzhen) Control Technology Co., Ltd
Serial No.: (n.a., marked #1 by test site)
Power Supply: Lithium Battery 3V (CR2025)
AE-3: AV Cable
Model Name: (n.a.)
Brand Name: (n.a.)
Manufacturer: NSK (Shenzhen) Control Technology Co., Ltd
Serial No.: (n.a., marked #1 by test site)
Wire Length: 110cm
AE-4: mini-USB to USB Cable
Model Name: (n.a.)
Brand Name: (n.a.)

Manufacturer: NSK (Shenzhen) Control Technology Co., Ltd
Serial No.: (n.a., marked #1 by test site)
Wire Length: 110cm

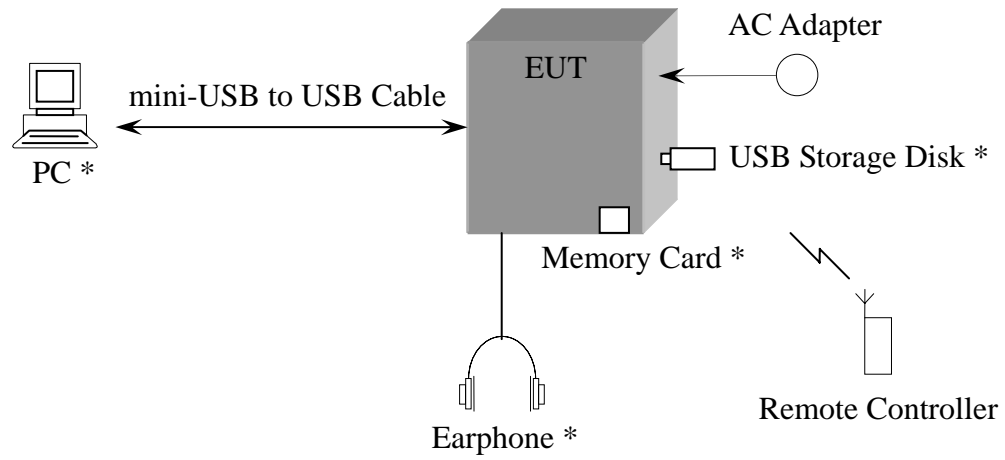
3. Test Sample Configuration

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

- a) A d.c. power supply input port, which can be connected to the "AE-1: AC Adapter" supplied by applicant.
- b) An inner inductive fitting, which can co-operate with the "AE-2: Remote Controller" supplied by applicant to control the EUT.
- c) An AV output port, which can be connected to the AV input ports of external equipments e.g. a TV via the "AE-3: AV Cable" supplied by applicant and other ones if applicable.
- d) A mini-USB port, which can be connected to the USB port of external equipments e.g. a Personal Computer (PC) via the "AE-4: mini-USB to USB Cable" supplied by applicant and other ones if applicable.
- e) An earphone port, which can be connected to an applicable Earphone.
- f) A 5-in-1 MMC/SD/xD/MS/MS-PRO memory card port and a CF memory card port, which can be inserted into an applicable Memory Card.
- g) An USB port, which can be inserted into external USB equipments e.g. an USB Storage Disk.

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

As to information mentioned above, an ideal full-configuration of the Test Sample (EUT) shows as follow figure; considering the actual application, several test modes are employed to perform testing, see section 3.1 of this test report.



Full-Configuration of Test Sample
(*: ancillary equipments supplied by test site)

2.2 Test Standards and Test Results Summary

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 listed as below:

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

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

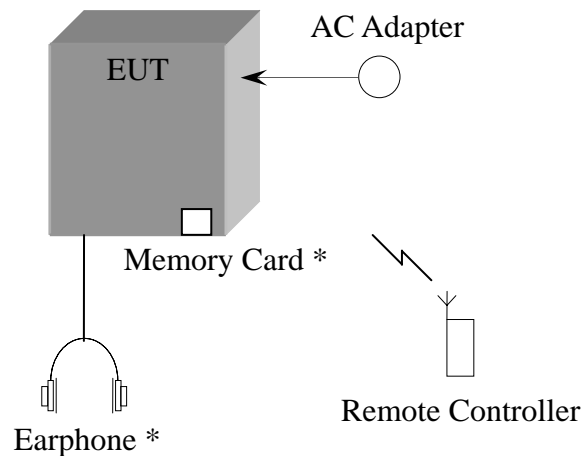
1. Normal Test Mode

The Test Sample (EUT) operates in its typical application.

A multi-media file stored in the internal memory of the EUT or the Memory Card inserted into the EUT or the USB Storage Disk inserted into the EUT is called and executed by the EUT which will then play the file through its own screen and/or sound-box or the Earphone connected to the EUT.

The audio and display specifications of the EUT are tuned to their highest levels; The Remote Controller can be used to control the EUT; The EUT is powered by the AC Adapter which is powered by 120V 60Hz AC mains supply; All of other ports on the EUT keep idling.

The figure below is the test configuration for the Test Sample (EUT) employed in this test report:



Normal Test Mode Configuration of Test Sample
(*: ancillary equipments supplied by test site)

2. USB Test Mode

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

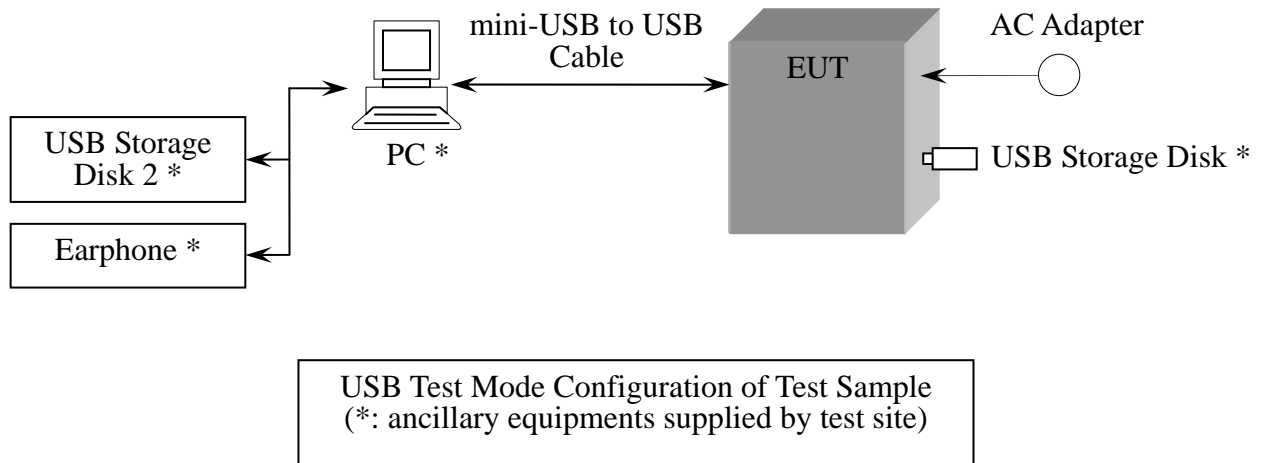
A file is transferred continually between the PC and the internal memory of the EUT or the Memory

Card inserted into the EUT or the USB Storage Disk inserted into the EUT through the mini-USB to USB Cable.

The EUT can not be controlled and operated whether or not by Remote Controller under this test mode except exiting from this test mode e.g. un-plugging of the mini-USB to USB Cable; The EUT is powered by the AC Adapter which is powered by 120V 60Hz AC mains supply; all of other ports on the EUT keep idling.

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 2 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:



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:

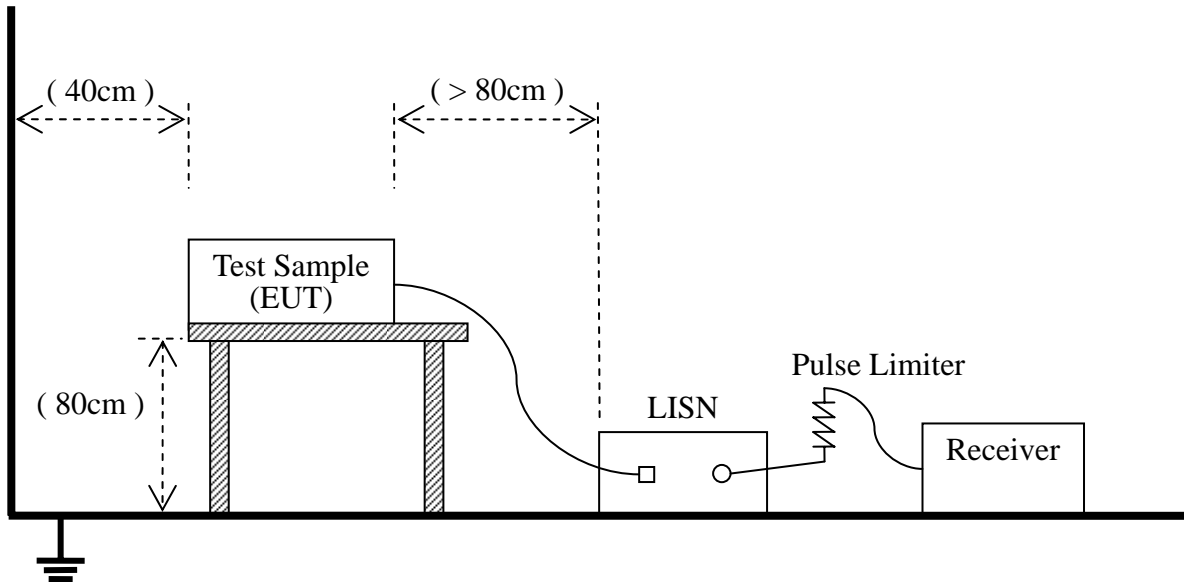
- a) The limit subjects to the Class B digital device.
- b) The lower limit shall apply at the band edges.
- c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.2.2 Test Procedure

- a) The test frequency range is from 150kHz to 30MHz.
- b) The Peak (PK) detector is employed to sweep the conducted interference over the test frequency range.
- c) 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.
- d) Both L-Phase and N-Phase lines of the power mains connected to the Test Sample (EUT) are employed to perform this test.
- e) 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. A Pulse Limiter is employed to protect the measuring instrument of Receiver. The factors of the whole test system are calibrated to correct the reading.

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.)
Memory Card	(n.a.)	256MB TF Card	(n.a.)	(n.a.)	(n.a.)
USB Storage Disk	(n.a.)	512MB	(n.a.)	(n.a.)	(n.a.)
USB Storage Disk 2	DEC	512MB	(n.a.)	(n.a.)	(n.a.)
Earphone	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)

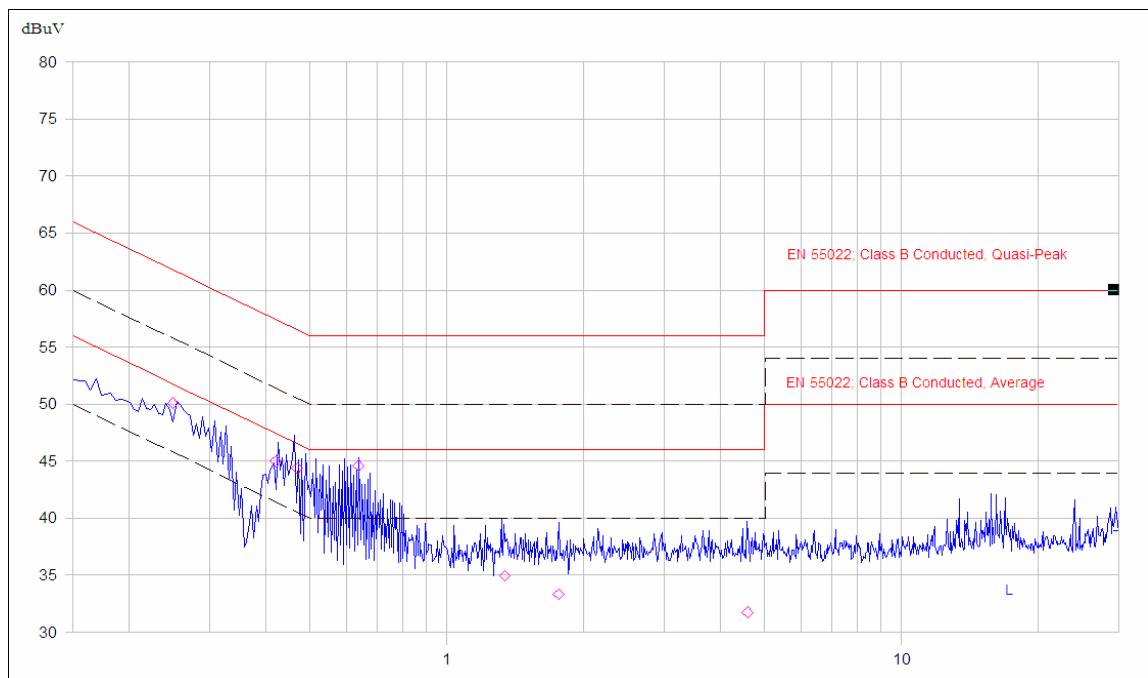
3.2.4 Test Result

1. Normal Test Mode

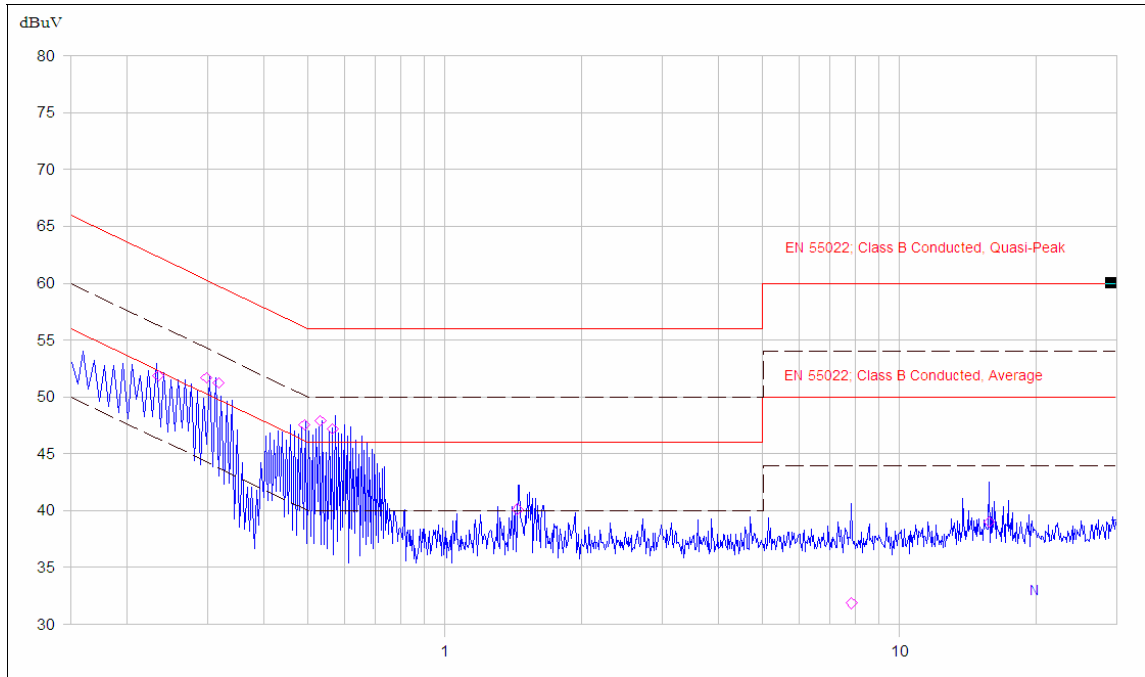
a) Test Verdict Recorded for Suspect Points

No.	@Frequency (MHz)	Suspect Emission Levels (dB μ V)				Limit (dB μ V)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.249	50.1	43.6	36.4	L	61.8	51.8	PASS
2	0.420	45.0	37.9	23.6	L	57.4	47.4	PASS
3	0.469	44.4	36.7	24.5	L	56.5	46.5	PASS
4	0.638	44.6	34.9	22.0	L	56.0	46.0	PASS
5	1.340	35.0	27.7	21.5	L	56.0	46.0	PASS
6	1.761	33.3	27.0	21.0	L	56.0	46.0	PASS
7	4.582	31.7	26.5	20.4	L	56.0	46.0	PASS
8	0.234	51.9	43.9	24.3	N	62.3	52.3	PASS
9	0.299	51.7	42.7	24.4	N	60.3	50.3	PASS
10	0.318	51.2	42.3	23.8	N	59.8	49.8	PASS
11	0.490	47.6	38.8	22.5	N	56.2	46.2	PASS
12	0.532	47.9	38.8	22.7	N	56.0	46.0	PASS
13	0.566	47.2	38.9	22.5	N	56.0	46.0	PASS
14	1.445	40.1	31.4	21.6	N	56.0	46.0	PASS
15	7.834	31.9	25.9	20.0	N	60.0	50.0	PASS

b) Test Plots



(Plot A: L Phase)



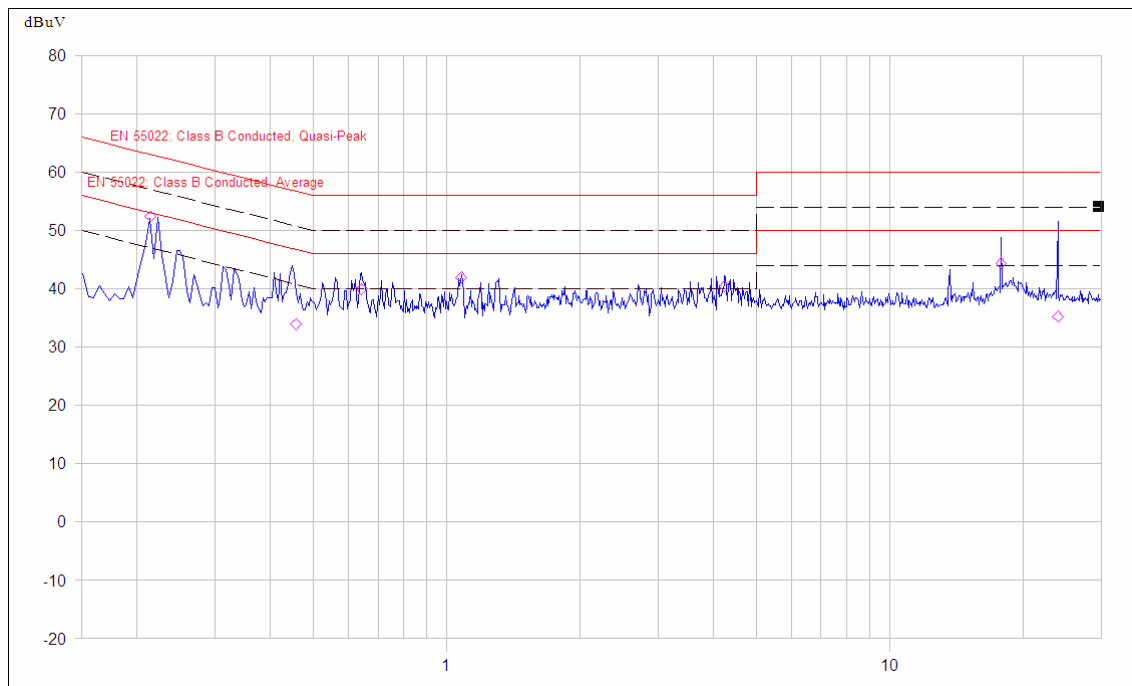
(Plot B: N Phase)

2. USB Test Mode

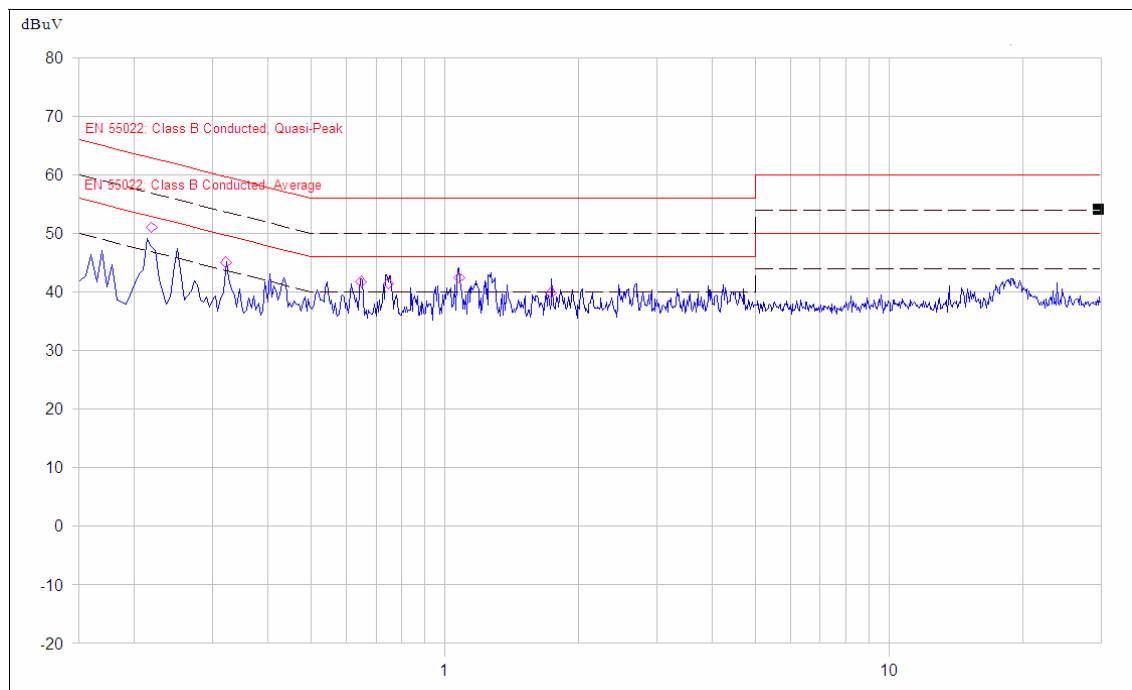
a) Test Verdict Recorded for Suspect Points

No.	@Frequency (MHz)	Suspect Emission Levels (dBμV)				Limit (dBμV)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.214	52.4	50.4	40.8	L	63.0	53.0	PASS
2	0.456	33.9	28.3	22.2	L	56.8	46.8	PASS
3	0.643	39.9	35.1	27.0	L	56.0	46.0	PASS
4	1.078	41.9	38.2	29.2	L	56.0	46.0	PASS
5	17.861	44.3	43.0	33.9	L	60.0	50.0	PASS
6	23.994	35.3	34.7	23.6	L	60.0	50.0	PASS
7	0.219	51.0	48.3	40.9	N	62.9	52.9	PASS
8	0.322	45.0	41.5	34.8	N	59.7	49.7	PASS
9	0.648	41.7	38.1	30.9	N	56.0	46.0	PASS
10	0.746	41.4	38.7	26.8	N	56.0	46.0	PASS
11	1.077	42.4	39.3	31.5	N	56.0	46.0	PASS
12	1.733	39.9	33.4	26.0	N	56.0	46.0	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:

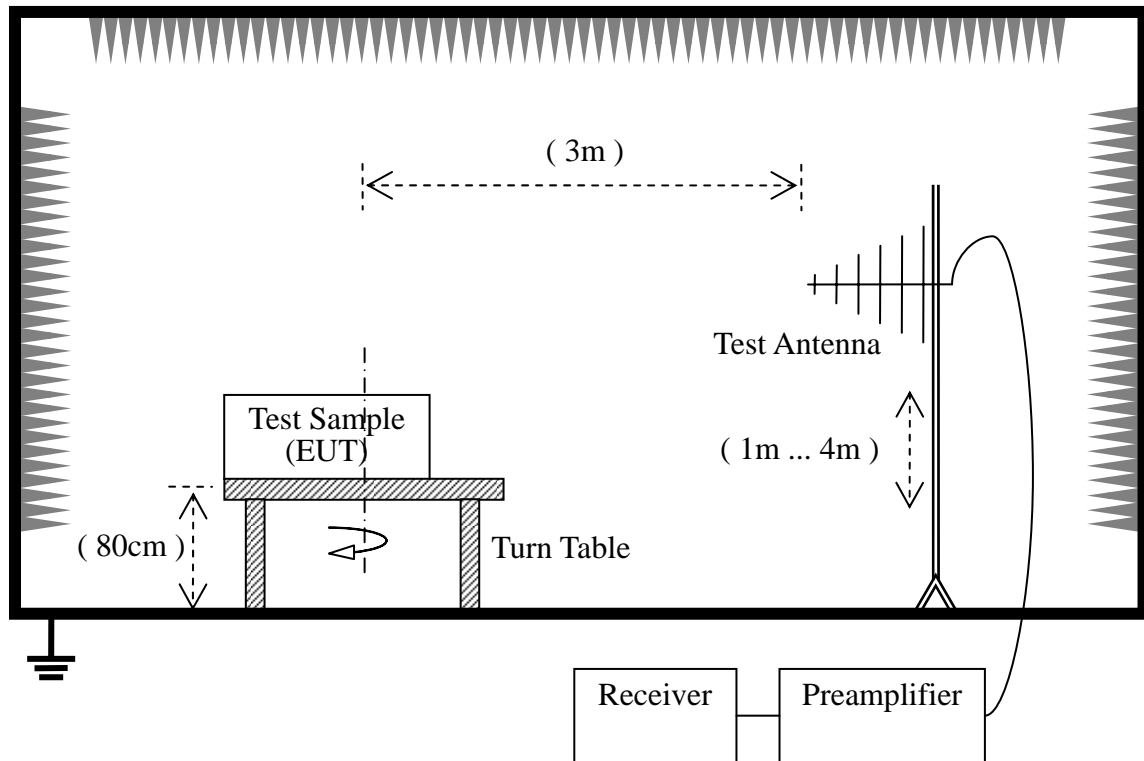
- Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.
- In the emission tables above, the tighter limit applies at the band edges.

3.3.2 Test Procedure

- The test frequency range is from 30MHz to 1GHz.
- The Test Antenna (ANT) 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 (TT) is located separately at the degree of $\text{DEGTT}(n) = n \cdot 45$, $n \in [0, 8]$.
- 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 antenna 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 Receiver. The factors of the whole test system are calibrated to correct the reading.

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
Preamplifier	(n.a.)	20dB	(n.a.)	(n.a.)	(n.a.)
Memory Card	(n.a.)	256MB TF Card	(n.a.)	(n.a.)	(n.a.)
USB Storage Disk	(n.a.)	512MB	(n.a.)	(n.a.)	(n.a.)
USB Storage Disk 2	DEC	512MB	(n.a.)	(n.a.)	(n.a.)
Earphone	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)

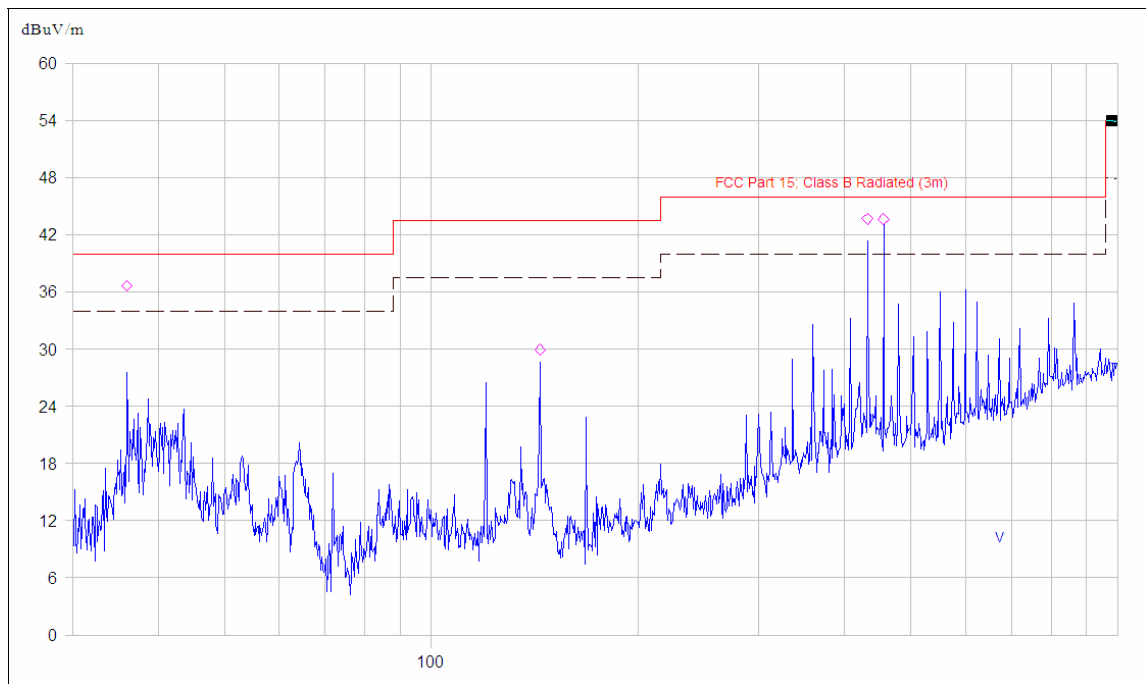
3.3.4 Test Result

1. Normal Test Mode

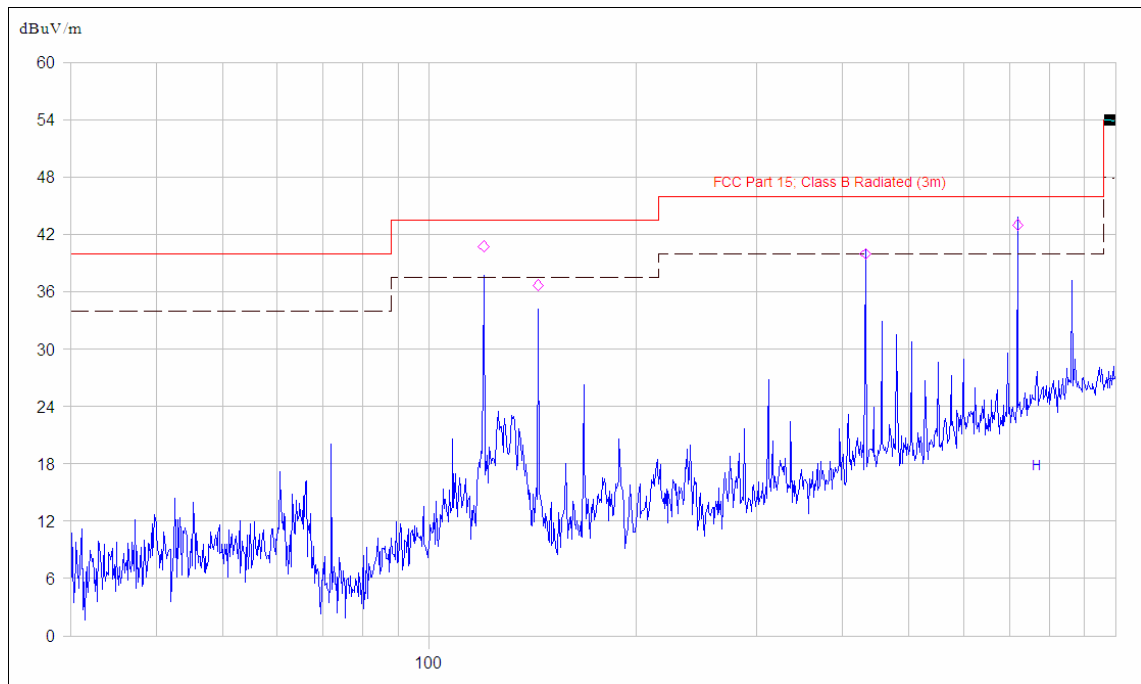
a) Test Verdict Recorded for Suspect Points

No.	@Frequency (MHz)	Suspect Emission Levels (dBμV/m)			QP Limit (dBμV/m)	Result
		PK	QK	Antenna Polarization		
1	35.996	36.6	28.0	Vertical	40.0	PASS
2	144.022	29.9	27.7	Vertical	43.5	PASS
3	432.036	43.7	40.8	Vertical	46.0	PASS
4	456.075	43.6	42.3	Vertical	46.0	PASS
5	120.017	40.8	39.5	Horizontal	43.5	PASS
6	144.011	36.7	35.5	Horizontal	43.5	PASS
7	720.091	43.0	40.4	Horizontal	46.0	PASS
8	432.058	40.0	38.4	Horizontal	46.0	PASS

b) Test Plots



(Plot A: Test Antenna Vertical)



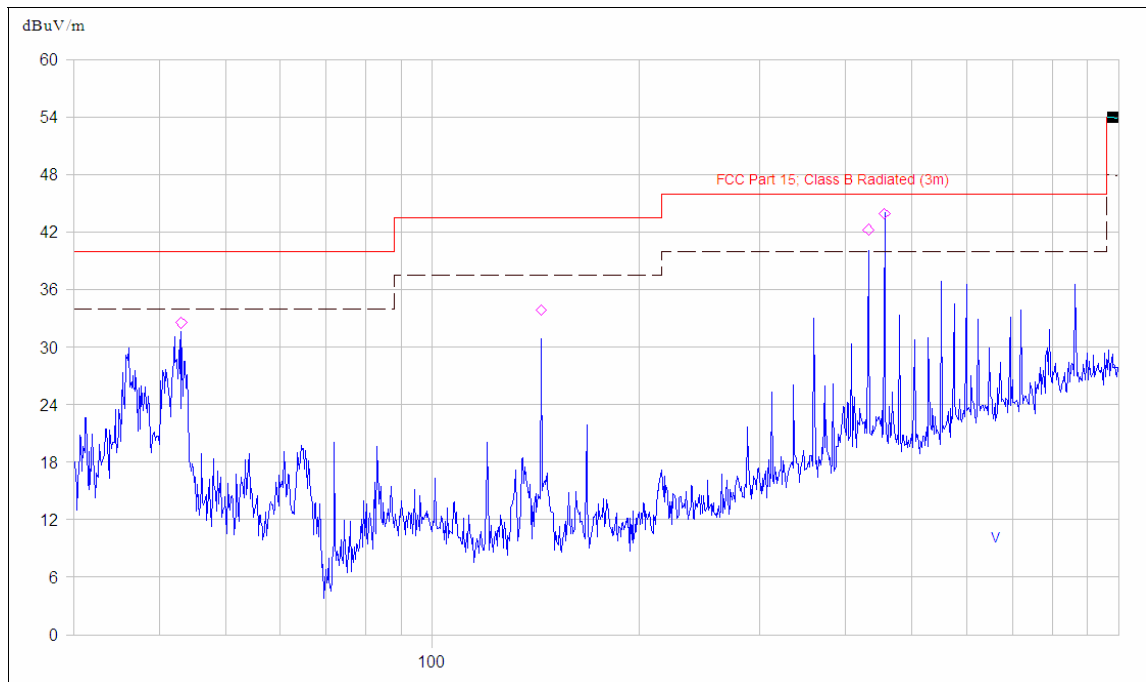
(Plot B: Test Antenna Horizontal)

2. USB Test Mode

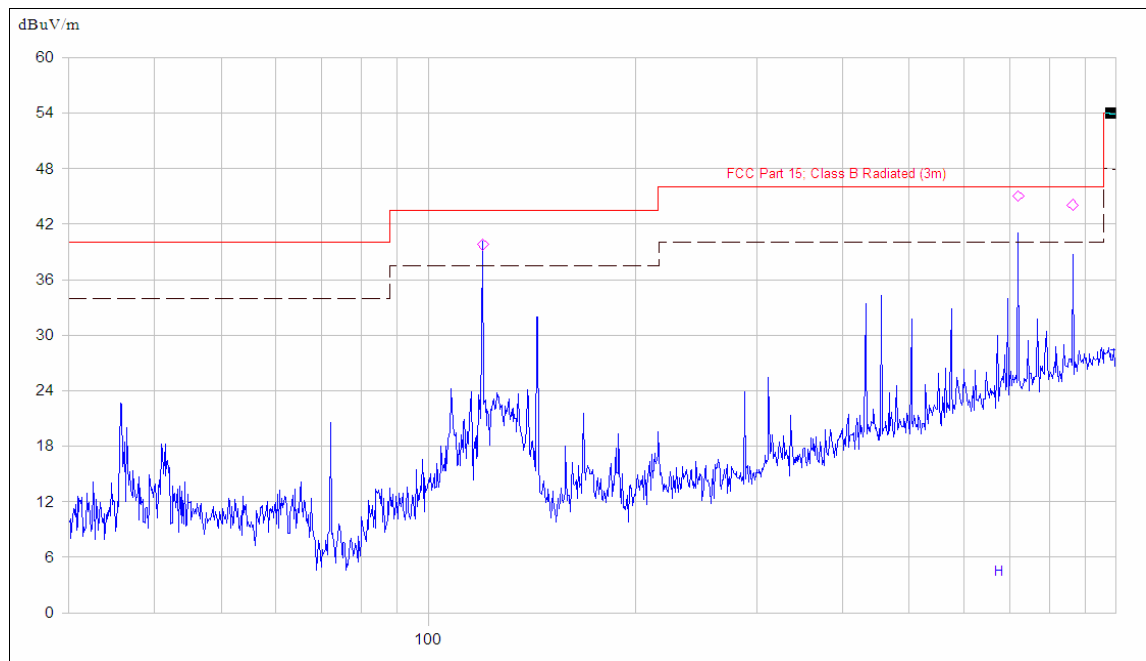
a) Test Verdict Recorded for Suspect Points

No.	@Frequency (MHz)	Suspect Emission Levels (dBμV/m)			QP Limit (dBμV/m)	Result
		PK	QK	Antenna Polarization		
1	43.045	32.5	22.5	Vertical	40.0	PASS
2	144.020	33.9	32.4	Vertical	43.5	PASS
3	432.056	42.2	40.0	Vertical	46.0	PASS
4	456.056	43.9	43.0	Vertical	46.0	PASS
5	120.005	39.8	38.7	Horizontal	43.5	PASS
6	720.087	45.0	43.0	Horizontal	46.0	PASS
7	864.113	44.1	41.8	Horizontal	46.0	PASS

b) Test Plots



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

** END OF REPORT **