ECMG Worldwide Certification Solutions
ECMG Worldwide Certification Solution, Inc.
www.ecmg-global.com

EMI Test Report

Model Name: USB HUB
Model Number: DX-B7PORT
Brand Name: DYNEX
Trade Mark: DYNEX

FCC ID: XJIBLKDXB7PORT

Prepared for Belkin Electronics (Changzhou) Co., Ltd.

According to FCC Part 15, Class B

Test Report #:	*SHA-0906-8254-FCC*
Prepared by:	*Cloud Feng*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen _____ *2009, July 13*

Paul Chen *Date*

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location: *ECMG Worldwide Certification Solution, Inc. (China)*
Building 2, 1298 Lian Xi Road,
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FCC Registration Number: *172634*

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Administrative Data

Test Sample : USB HUB

Model Tested : DX-B7PORT

Trade Mark : DYNEX

Serial Number : Engineering Sample

Date Tested : 2009, June 27th

Applicant : Belkin Electronics (Changzhou) Co., Ltd.
Bldg 6C, No.8 Xi-Hu Road, Wujin Hi-Tech Industrial Zone, Jiangsu

Telephone : 86-519-86220991

Fax : 86-519-86226020

Manufacturer : Belkin Electronics (Changzhou) Co., Ltd.
Bldg 6C, No.8 Xi-Hu Road, Wujin Hi-Tech Industrial Zone, Jiangsu

EUT Description

Belkin Electronics (Changzhou) Co., Ltd., model DX-B7PORT (referred to as the EUT in this report) is a USB HUB.

The highest frequency generated by the EUT is 480 MHz, so the frequency range tested is from 30MHz – 2000MHz.

Test Summary

The Electromagnetic Compatibility requirements on model DX-B7PORT for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

Emission Tests				
Specifications	**Description**	**Test Results**	**Test Point**	**Remark**
FCC Part 15.107 (150kHz - 30MHz)	Conducted Emission	**For DX-B7PORT:** Passed by 19.38 dB of QP Passed by 18.42 dB of AVE	AC Input Port	Attachment 1
FCC Part 15.109 (30MHz - 2000MHz)	Radiated Emission	**For DX-B7PORT:** Passed by 1.45 dB of QP	Enclosure	Attachment 2

Test Mode Justification

This device complies with Part 15 Class B of the FCC rules. The system was tested in the Transmitting data mode.

The EUT connects one U-disk and the other ports connect with USB cables. Pursuant to section 6.1.3(4) of ANSI C63.4, Where there are multiple ports all of the same type, additional connecting cables or wires shall be added to the EUT to determine the effect these cables or wires have on both radiated and conducted emissions from the EUT. The number of additional cables or wires should be limited to the condition where the addition of another cable or wire does not significantly affect the emission level, i.e., varies less than 2 dB, provided, of course, that the EUT remains compliant. These additional cables or wires need not be terminated.

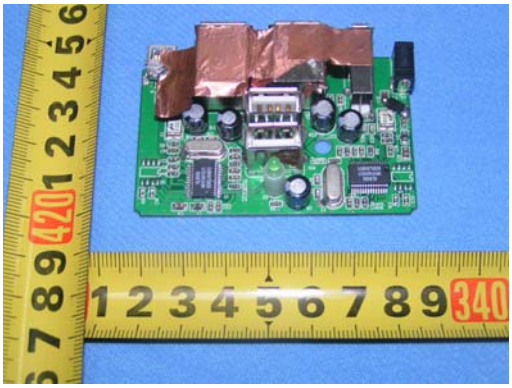
EUT Exercise Software

The software transmit.bat runs on windowsXP, which was used to exercise the EUT during testing. The files are copying and deleting continuously from the U-disk attached on the USB port of EUT to the PC.

Equipment Modification

There is a copper cover the USB connecter. This modification is made to the EUT to bring the EUT into compliance with the appropriate specifications, that the product will have all of the modification incorporated into the product when manufactured and placed on the market.

The copper's dimension is 70mm 20mm, Manufacturer: lairdcateron, Kunshan.*



There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.

Test System Details

EUT	
Model Number:	DX-B7PORT
Trade Mark:	DYNEX
Input Voltage:	5V DC
Serial Number:	Engineering Sample
Description:	USB HUB
Manufacturer:	Belkin Electronics (Changzhou) Co., Ltd.

EUT Power Supply	
Model Numbers:	PS0538
Input:	100-240V 50/60Hz 0.6A
Output:	5V 3.5-3.8A

Support Equipment

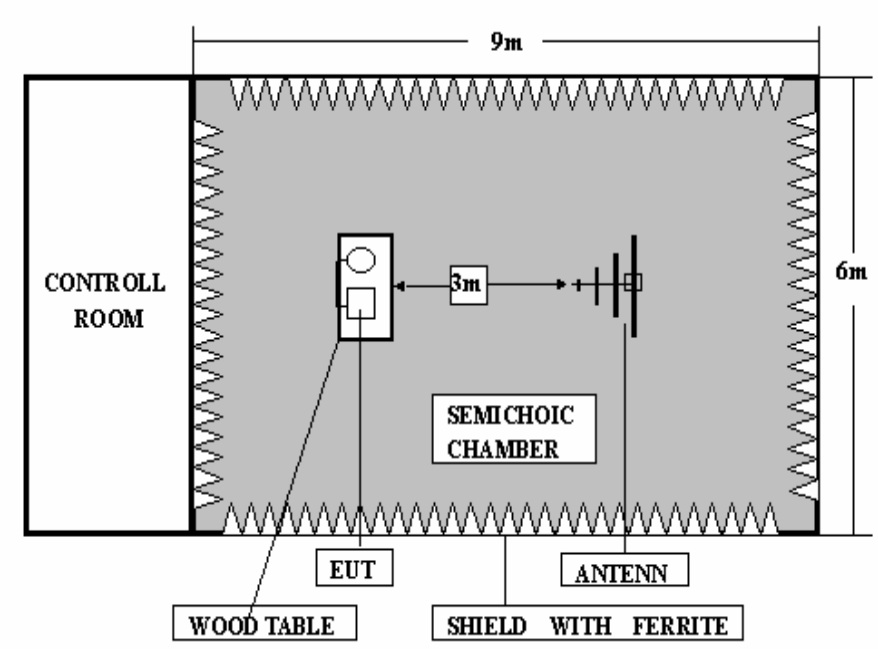
Description	Model Number	Serial Number	Manufacturer	Power Cable Description
PC	OPTIPLEX 330	HBSF92X	DELL	1.8m unshielded
Monitor	E178FPC	CN0WR979641 807CA7L4C	DELL	1.8m unshielded
Keyboard	L100	CN0RH656658 907C401F9	DELL	N/A
Mouse	MOC5UO	G1D02BPQ	DELL	N/A
Printer converter	45CV	961217	INTEL LIGENT	N/A
Remote control box	IT-251B	N/A	N/A	N/A

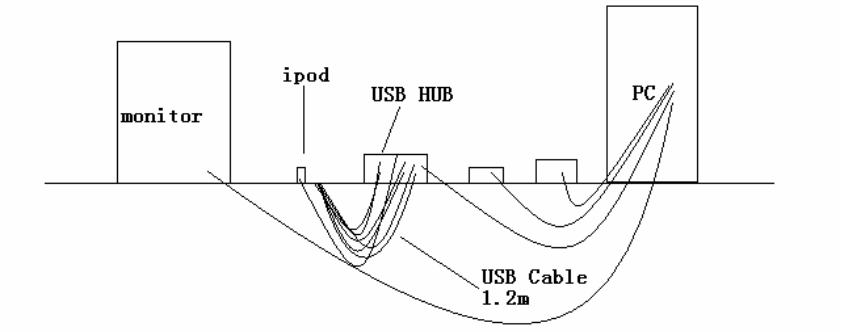
Continue on to the next page…

U disk	*iPod shuffle MB683*	*03285*	*Apple*	*1.2m unshielded*

Cable Description					
Description	***From***	***To***	***Length (Meters)***	***Shielded (Y/N)***	***Ferrite (Y/N)***
Power Cable	*Adaptor*	*EUT*	*1.5m*	*N*	*N*
USB Cable	*EUT*	*PC*	*1.2m*	*Y*	*N*
Parallel Cable	*Converter*	*PC*	*0.5m*	*N*	*N*
Serial Cable	*Remote box*	*PC*	*1.5m*	*N*	*N*
USB Cable	*Udisk*	*EUT*	*1.2m*	*Y*	*N*
USB CableX6	*EUT*		*1.2m*	*N*	*N*

Configuration of Tested System





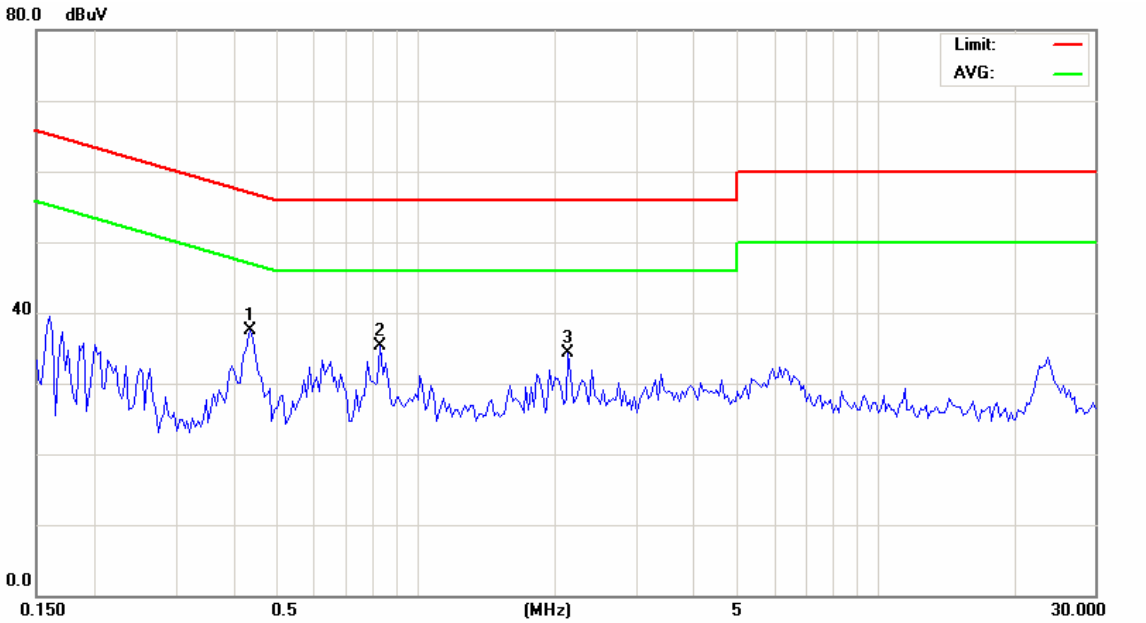
EUT arrangements Layout View

ATTACHMENT 1 – CONDUCTED EMISSION TEST RESULTS

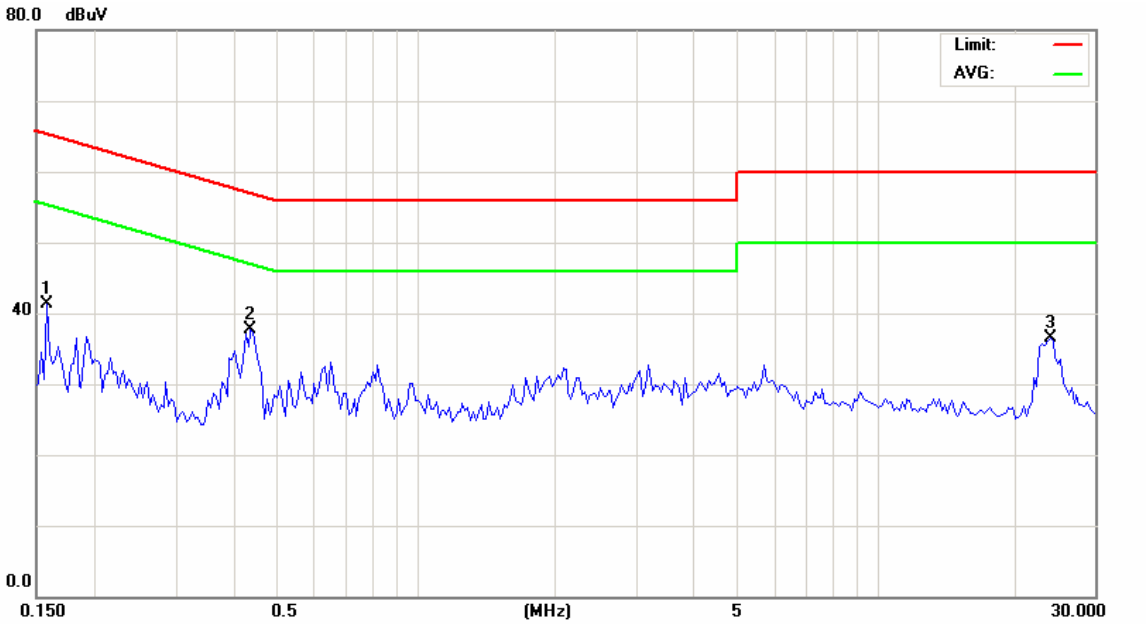
CLIENT:	Belkin Electronics (Changzhou) Co., Ltd.	**TEST REFERENCE:**	FCC Part 15 subpart B Class B
MODEL TESTED:	DX-B7PORT	**PRODUCT:**	USB HUB
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	ITE equipment
TEMPERATURE:	22°C	**HUMIDITY:**	54%
ATM PRESSURE:	102.1Pa	**GROUNDING:**	Grounding through USB
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2009, June 27

SETUP METHOD:	ANSI C63.4-2003
TEST PROCEDURE:	a. 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. b. Connect EUT to the power mains through a line impedance stabilization network(LISN) c. The LISN provides 50ohm coupling impedance for the measuring instrument d. Both sides of AC line were checked for maximum conduced interference. e. The frequency range from 150KHz to 30MHz was searched. f. Set the test-receiver system to Peak Detect Function and Specified bandwidth. g. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.
TESTED RANGE:	150kHz to 30MHz
TEST VOLTAGE:	120VAC/60Hz
RESULTS:	**For DX-B7PORT:** The EUT meets the requirements of test reference for Conducted Emissions on line N by 19.38 dB of Quasi-Peak detector and by 18.42 dB of Average detector. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

For DX-B7PORT:



Line L Conducted Emission Graph



Line N Conducted Emission Graph

Line L (Hot Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (dBuV)**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	0.439	37.50	57.09	-19.59	0.439	26.81	47.09	-20.28
2	0.839	35.24	56.00	-20.76	0.839	25.37	46.00	-20.63
3	2.150	34.35	56.00	-21.65	2.150	26.62	46.00	-19.38
Line N (Neutral Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (dBuV)**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	0.158	41.37	65.55	-24.18	0.158	27.02	55.55	-28.53
2	0.439	37.71	57.09	-19.38	0.439	28.67	47.09	-18.42
3	23.951	36.48	60.00	-23.52	23.951	26.39	50.00	-23.61
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/08	11/28/09
LISN	R&S	ESH3-Z5	844249/018	12/04/08	12/03/09
LISN 2	EMCO	3816/2	00084033	12/04/08	12/03/09
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Cloud Feng _____ **REVIEWED BY:** Hangzhou _____

ENGINEER **SENIOR ENGINEER**

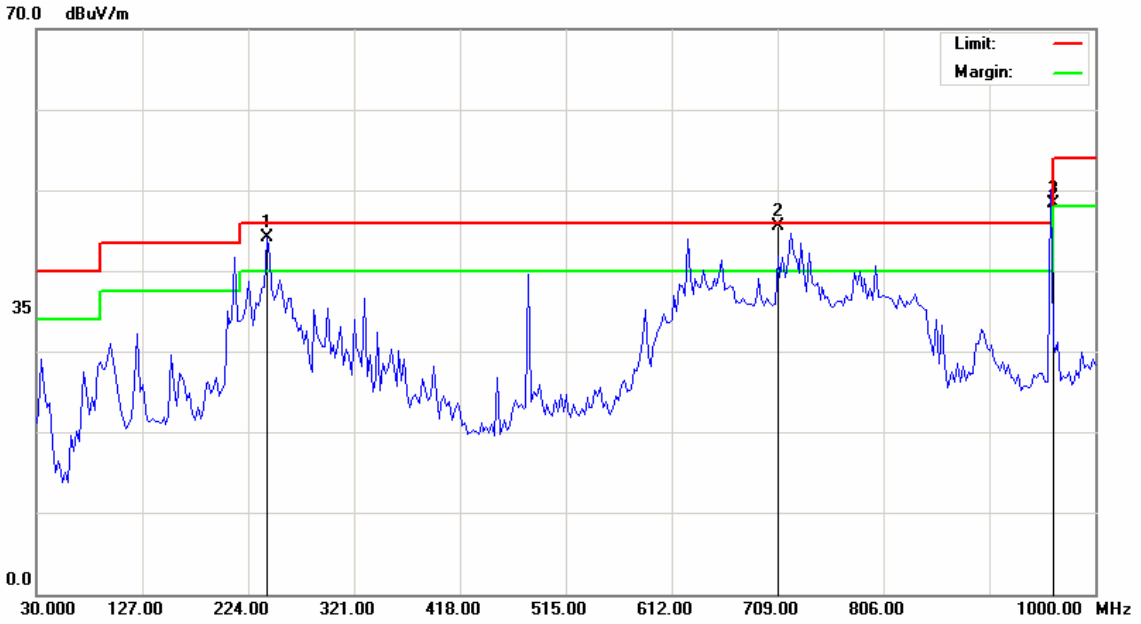
ATTACHMENT 2 – RADIATED EMISSION TEST RESULTS

CLIENT:	Belkin Electronics (Changzhou) Co., Ltd.	**TEST REFERENCE:**	FCC Part 15, Class B
MODEL TESTED:	DX-B7PORT	**PRODUCT:**	USB HUB
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	ITE equipment
TEMPERATURE:	22°C	**HUMIDITY:**	54%
ATM PRESSURE:	101.7Pa	**GROUNDING:**	Grounding through USB
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2009, June 27

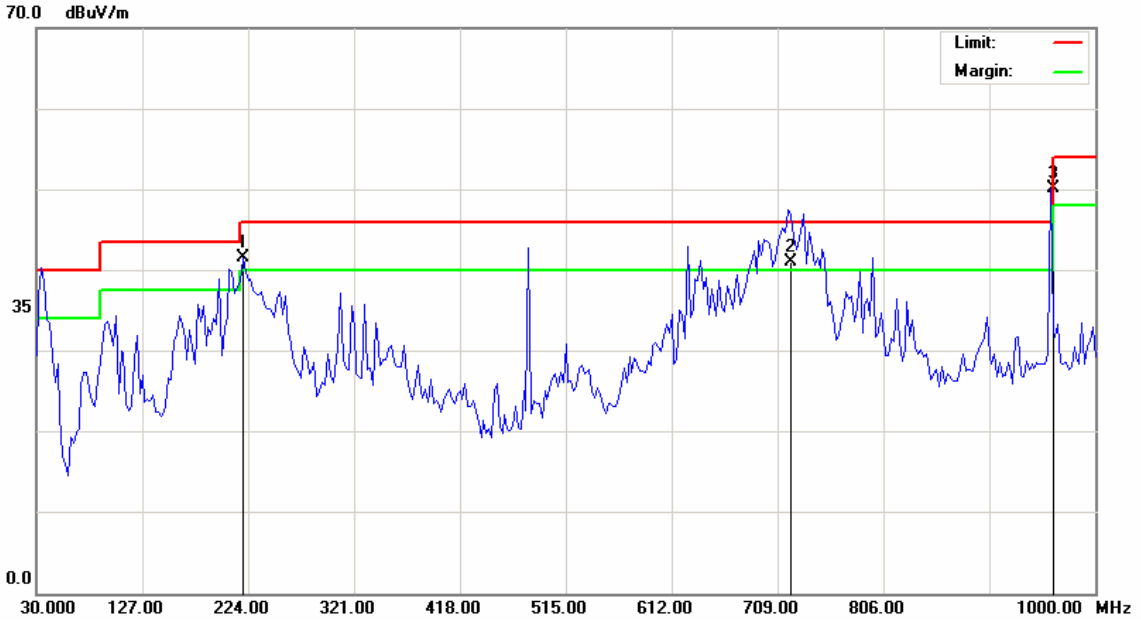
SETUP METHOD:	ANSI C63.4-2003
TEST PROCEDURE:	a. The EUT was placed on a rotatable table with 0.8 meters above ground. b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower. c. For each suspected emission the EUT was arranged to its worst case and turn table (from 0 degree to 360 degree) to find the maximum reading. d. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported. Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TESTED RANGE:	30MHz to 2000MHz
TEST VOLTAGE:	120VAC / 60Hz
RESULTS:	**For DX-B7PORT:** The EUT meets the requirements of test reference for Radiated Emissions on Horizontal polarization by 1.45 dB at 708.752 MHz. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB

For DX-B7PORT:

30MHz-1000MHz



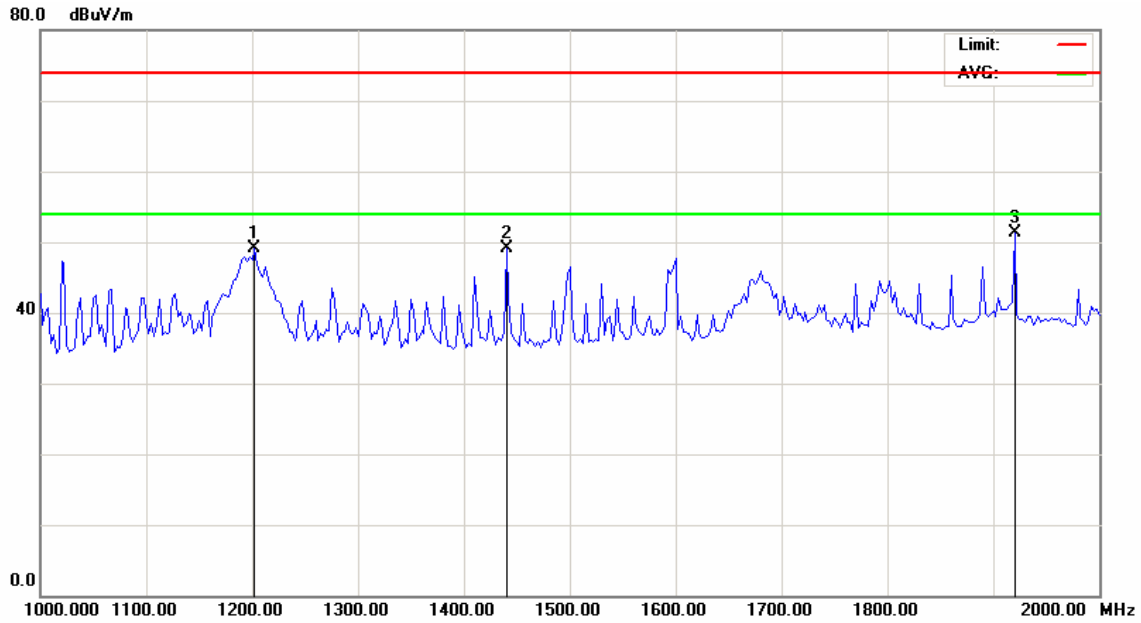
Field strength Emission Plot (Peak, Max Hold Mode Horizontal)



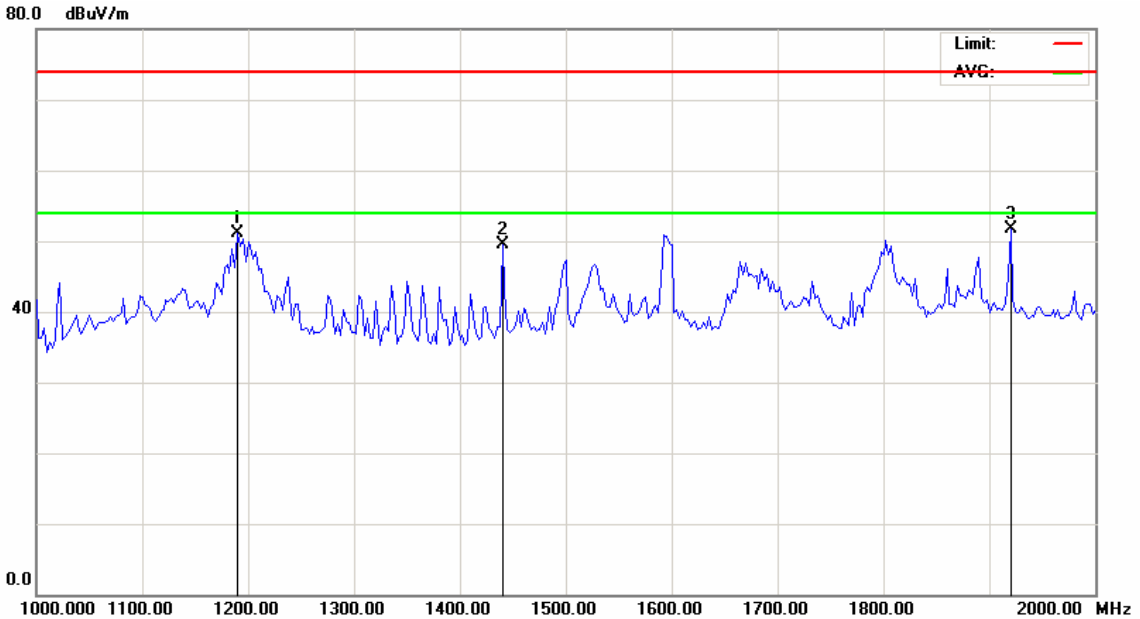
Field strength Emission Plot (Peak, Max Hold Mode Vertical)

30MHz-1000MHz							
Horizontal							
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	240.976	14.42	44.12	46.00	-1.88	351	220
2	708.752	22.82	44.55	46.00	-1.45	236	207
3	960.156	25.88	48.41	54.00	-5.59	277	102
Vertical							
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	219.153	13.99	41.49	46.00	-4.51	163	108
2	720.104	22.98	41.09	46.00	-4.91	230	148
3	960.151	25.88	50.17	54.00	-3.83	116	100
Set-up/Configuration: ANSI C63.4-2003							
Comments: None							
Note: All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.							

1000MHz- 2000MHz



Horizontal Radiated Emission Plot (Peak, Max Hold Mode)



Vertical Radiated Emission Plot (Peak, Max Hold Mode)

1000MHz-2000MHz								
Horizontal								
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected PK Level (dBuV/m)**	**3 Meter PK Limits (dB uV/m)**	**Margin (dB)**	**Corrected AV Level (dBuV/m)**	**3 Meter AV Limits (dBuV/m)**	**Margin (dB)**
1	1202.5	24.28	49.09	74.00	-24.91	25.67	54.00	-28.33
2	1440.3	25.77	49.18	74.00	-24.82	26.54	54.00	-27.46
3	1920.2	28.80	51.30	74.00	-22.70	26.38	54.00	-27.62
Vertical								
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected PK Level (dBuV/m)**	**3 Meter PK Limits (dB uV/m)**	**Margin (dB)**	**Corrected AV Level (dBuV/m)**	**3 Meter AV Limits (dBuV/m)**	**Margin (dB)**
1	1190.3	24.20	51.02	74.00	-22.98	26.95	54.00	-27.05
2	1440.1	25.77	49.42	74.00	-24.58	25.64	54.00	-28.36
3	1920.3	28.80	51.70	74.00	-22.30	26.34	54.00	-27.66
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/08	11/28/09
Broadband Antenna	Sunol	JB5	A110503	11/29/08	11/28/09
Broadband Horn Antenna	Schwarzbek	BBHA9120D	430	11/29/08	11/28/09
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Cloud Feng _____ **REVIEWED BY:** Hangzhou _____

ENGINEER **SENIOR ENGINNER**