

EMI Test Report

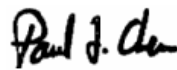
On Model Name: Color LCD Monitor
Model Number: L9XXXXXX
Brand Name: N/A
FCC ID : KXYL9XXXXXX

Prepared for
CHINA GREAT-WALL COMPUTER SHENZHEN CO., LTD

According to FCC Part 15 Class B

Test Report #: PSZ06060159FCCID
Prepared by: Ravin Su
QC Manager: Paul Chen

Test Report Released by:



Paul Chen

2006, August 29

Date

Test Location

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

Test Site Location: *Shenzhen Electronic Product Quality Testing Center.
Electronic Testing Building Shahe Road, Xili, Nanshan
District Shenzhen 518055, P.R. China.*

Tel: *86-755-26703698*

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Registration Number: *261032*

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Accreditation Bodies

EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM, MIL-STD and Telecommunications Products.



In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public. FCC Registration #: 894293.



Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.

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1 General Description of EUT

Product: Color LCD Monitor

Brand name: /

Model No.: L9XXXXXX

Power Supply: DC 12V 5A

I/O Signal Ports: VGA

Applicant: CHINA GREAT-WALL COMPUTER SHENZHEN CO., LTD.

Applicant Address: Greatwall Computer Industry Park, Baoshi East Rd. Shiyan County, Baoan, Shenzhen

Manufacturer: CHINA GREAT-WALL COMPUTER SHENZHEN CO., LTD.

Manufacturer Address: Greatwall Computer Industry Park, Baoshi East Rd. Shiyan County, Baoan, Shenzhen

NOTE:

1. The EUT is 19inch LCD Monitor--class B information technology equipment according to FCC Part 15.For a more detailed features description about the EUT, please refer to User's Manual.
2. The models L9XXXXXX are a series of color LCD monitor, X can be A to Z or 0 to 9 or none, stands for different customers.
3. This series of color LCD monitor have different on the panel

All panels, main-boards and adaptors are listed below:

Panel	No	Manufacture	Model	Main-board	No	Model
	1	BOE	HT190E01-100		1	M56AK
	2	CHIMEI	M190E3-L02			
	3	CHIMEI	M190A1-L01			
	4	SAMSUNG	LTM190M2-L01			
	5	SAMSUNG	LTM190EX-L01			

Adaptor	WDS060120
	PAA060F
	SAWA-01-483

4. The EMC tests were performed on the samples listed below to represent the other models:

Sample No.	Panel	Main-board
1	BOE HT190E01-100	M56AK
2	CHIMEI M190E3-L02	
3	CHIMEI M190A1-L01	
4	SAMSUNG LTM190M2-L01	
5	SAMSUNG LTM190EX-L01	

2 Summary of Test Results

The EUT has been tested according to FCC part 15, Class B. The test procedure is according to ANSI C63.4: 2003. The test results are as following:

EMISSION		
Standard	Test Type	Result
FCC Part15 Class B	Radiated Emission	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> Fail <input type="checkbox"/> Inapplicable
	Conducted Emission	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> Fail <input type="checkbox"/> Inapplicable

3 Test Report Certification

We, ShenZhen Electronic Product Quality Testing Center, hereby certify that the Equipment Under Test (EUT) described above has been tested in our facility. The test record, data evaluation and EUT configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified.

Tested by: Zhu Qi, Date: 2006, August ,29

Checked by: Smart, Date: 2006, August ,29

Approved by: Wu Li An, Date: 2006, August ,30

4 Conducted Emission Test

4.1 Limits of Conducted Emission

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

Frequency range (MHz)	Conducted Limit (dB μ V), Class B digital device	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

NOTE:

1. The lower limit shall apply at the band edges.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

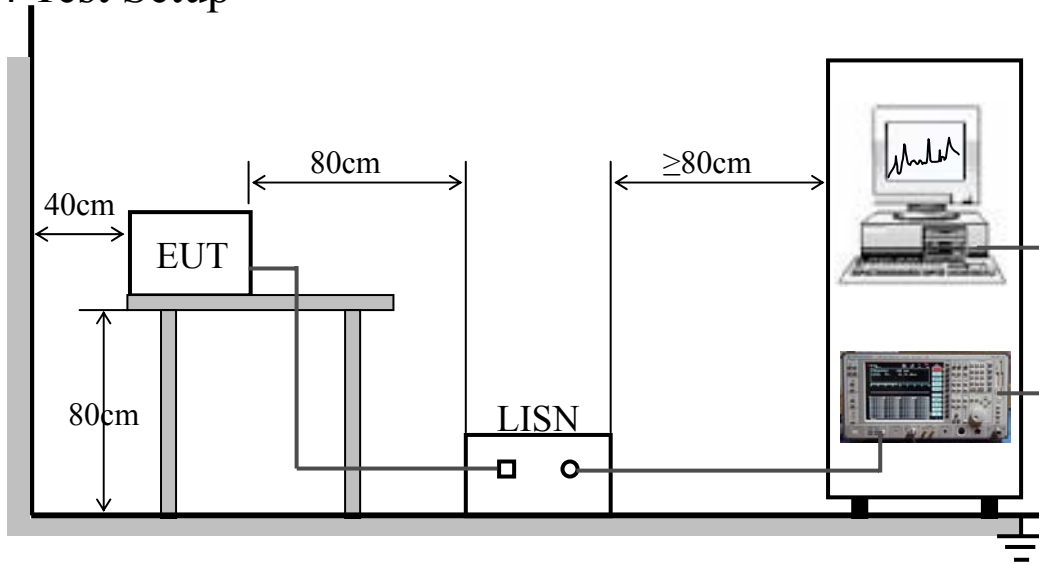
4.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Test Receiver	Schwarzbeck	FCKL1528	1528-158	Jun.10, 2006	Jun.10, 2007
LISN	Schwarzbeck	NSLK8127	8127-396	Jun.10, 2006	Jun.10, 2007
Shield Room	Nanbo Tech	Site 3	RF-1023	Mar.18, 2006	Mar.18, 2007

4.3 Test Procedure

- a. The EUT was placed 0.4 meters from the conducting wall of shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50 Ω /50 μ H of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels over 10dB under the prescribed limits are not reported.

4.4 Test Setup



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

4.5 EUT Operating Conditions

The EUT was powered by 120V AC Mains.

The EUT was running Hwin.exe, at maximum brightness and contrast with resolution 1024*768 75Hz, scrolls “H” in 14 full screen.

The frequency range is: H-Sync 30-60 kHz, V-Sync 50-75 Hz

4.6 Test Results

Sample 1:

No.	Freq. (MHz)	Limit Value (dBµV)		Emission Level (dBµV)	
		QP	AV	QP	AV
1	0.2805	60.8	50.8	39.00	--
2	1.1760	56.0	46.0	30.88	--
3	1.2435	56.0	46.0	34.19	--
4	23.1765	60.0	50.0	33.25	--

Sample 2:

No.	Freq. (MHz)	Limit Value (dBµV)		Emission Level (dBµV)	
		QP	AV	QP	AV
1	0.2805	60.8	50.8	39.08	--

2	1.1760	56.0	46.0	30.29	--
3	1.2435	56.0	46.0	34.39	--
4	23.1765	60.0	50.0	33.21	--

Sample 3:

No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.2805	60.8	50.8	39.07	--
2	1.1760	56.0	46.0	30.56	--
3	1.2435	56.0	46.0	34.23	--
4	23.1765	60.0	50.0	33.22	--

Sample 4:

No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.2805	60.8	50.8	39.07	--
2	1.1760	56.0	46.0	30.56	--
3	1.2435	56.0	46.0	34.23	--
4	23.1765	60.0	50.0	33.22	--

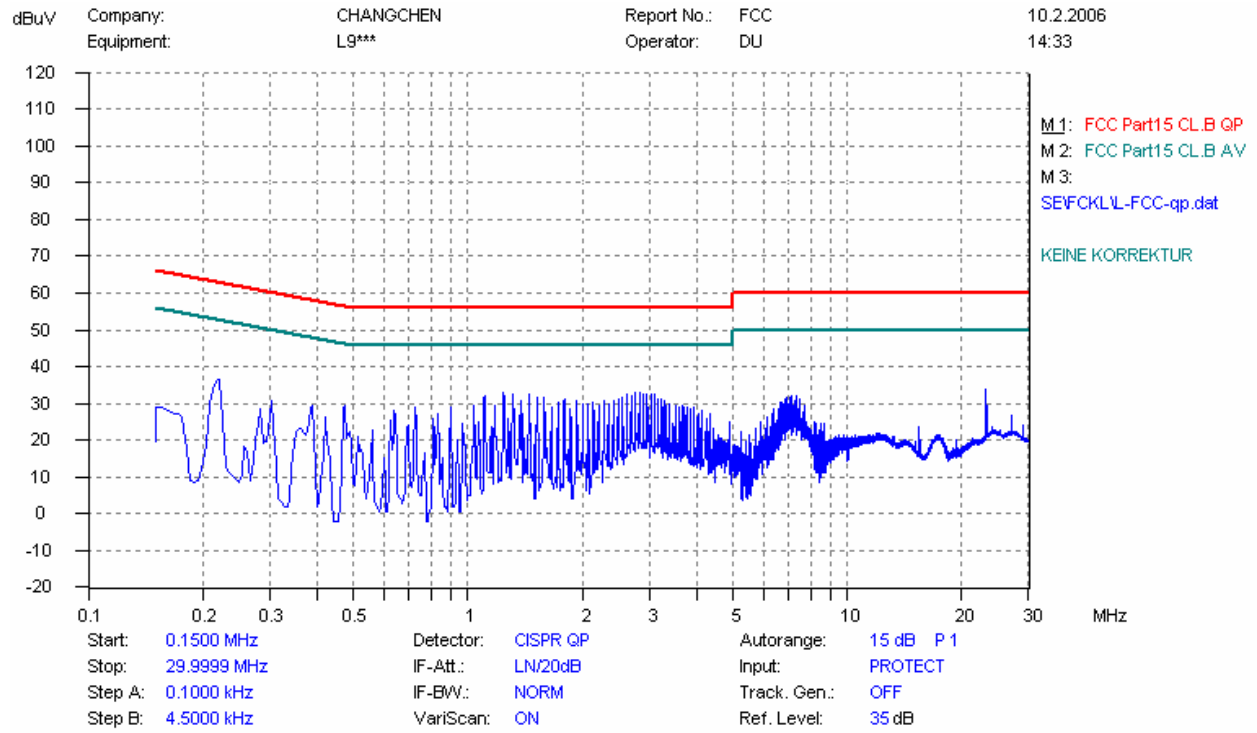
Sample 5:

No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.2805	60.8	50.8	39.07	--
2	1.1760	56.0	46.0	30.56	--
3	1.2435	56.0	46.0	34.23	--
4	23.1765	60.0	50.0	33.22	--

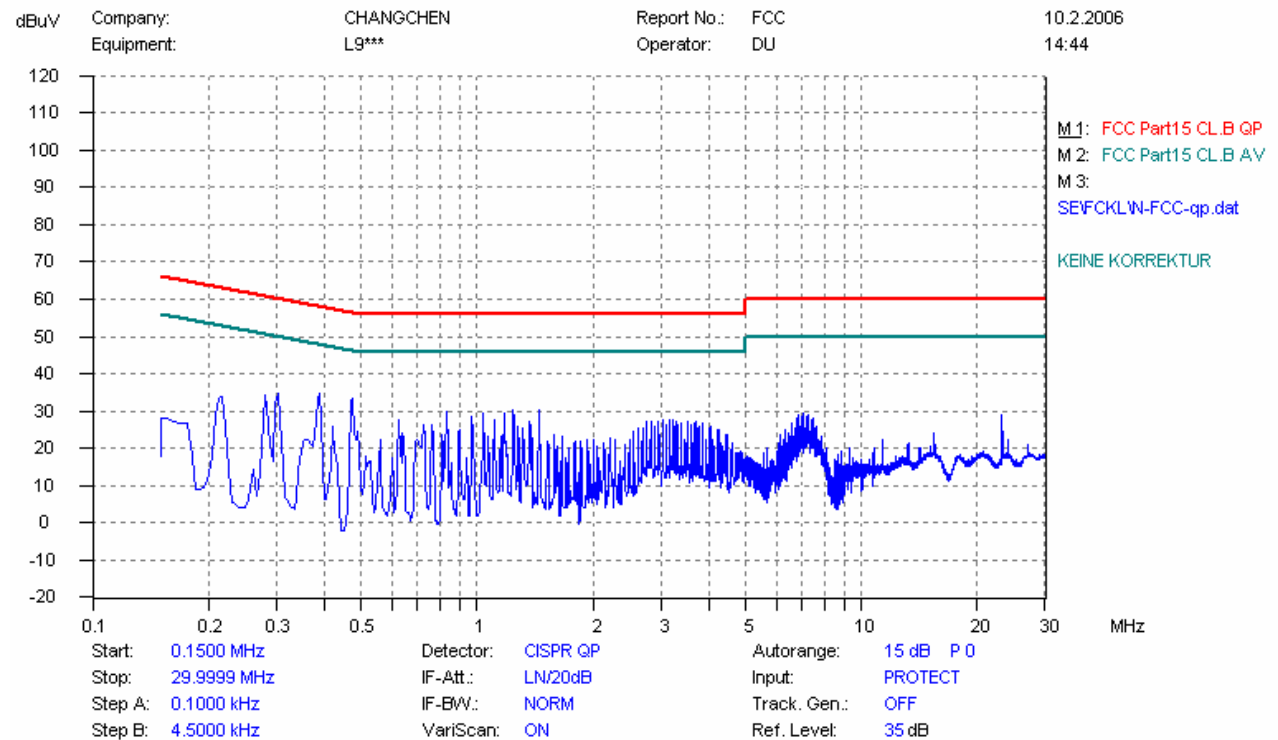
NOTE:

1. QP and AV are abbreviations of the quasi-peak and average individually.
2. If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.
3. The emission levels recorded above is the larger ones of both L phase and N phase.

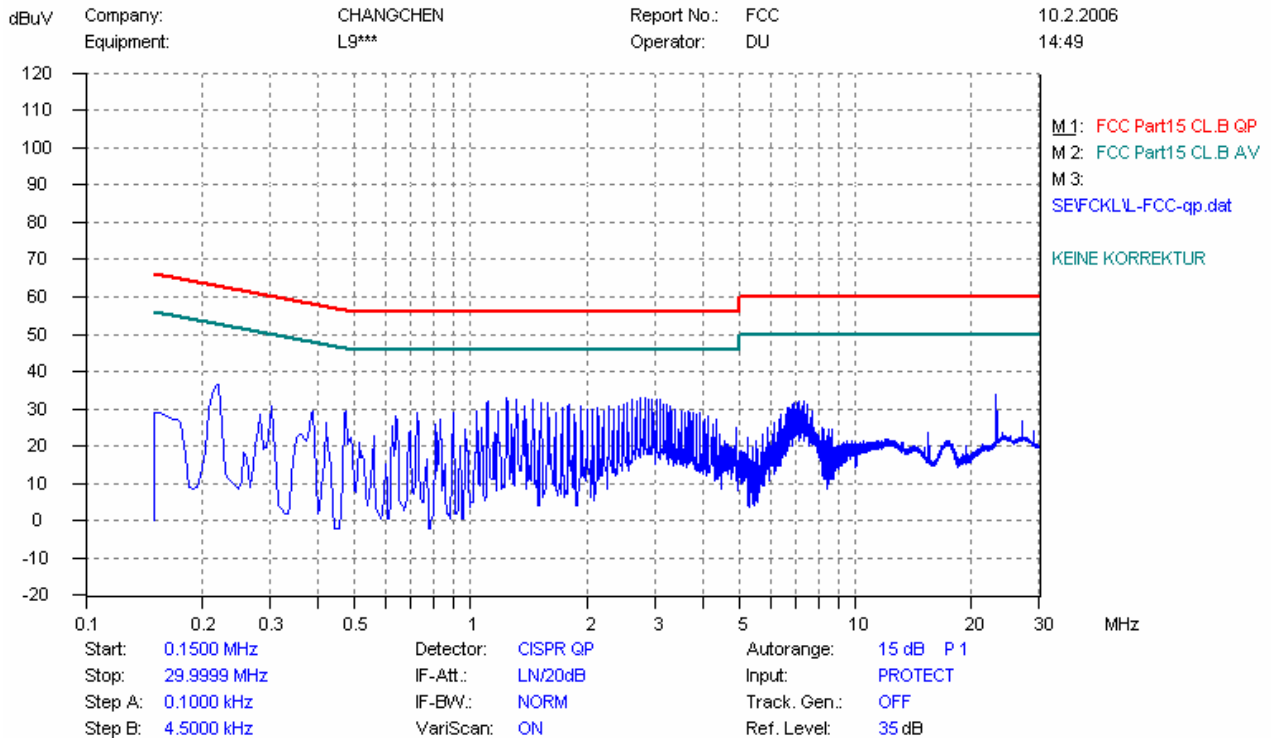
1. Mains terminal disturbance voltage, QP, L phase, Sample 1



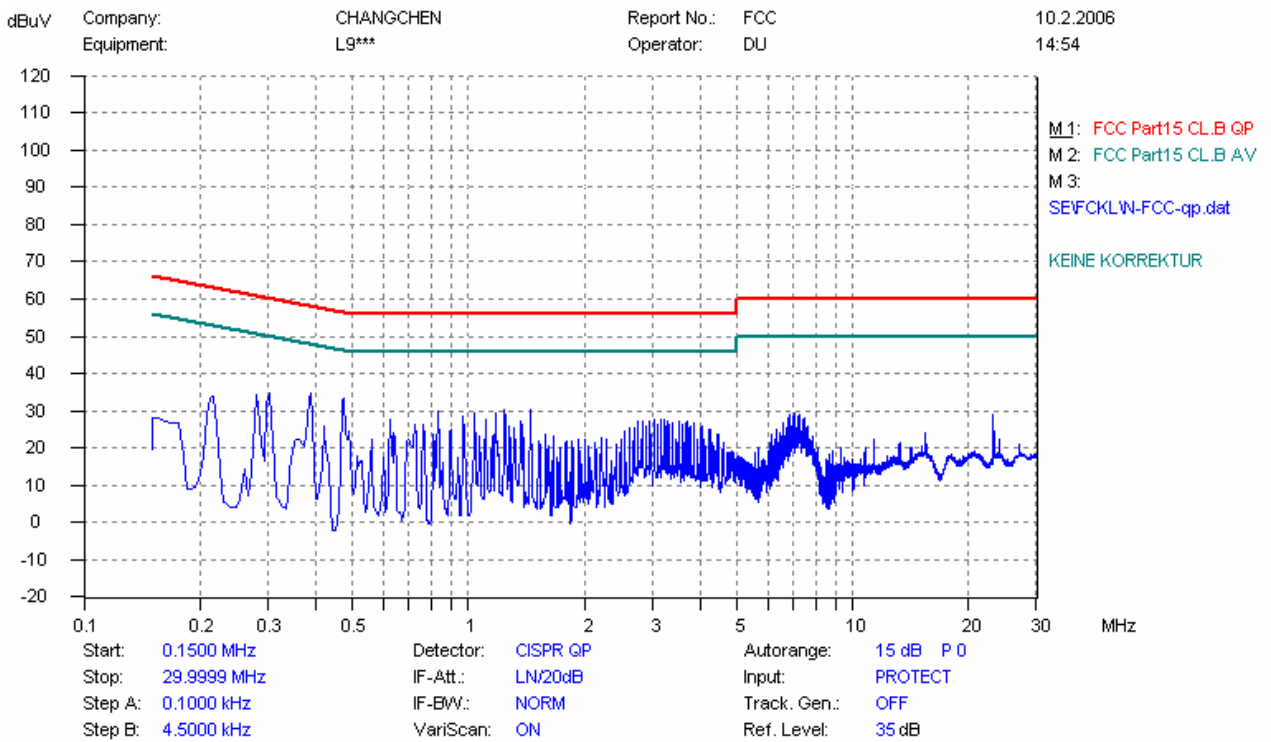
2. Mains terminal disturbance voltage, QP, N phase, Sample 1



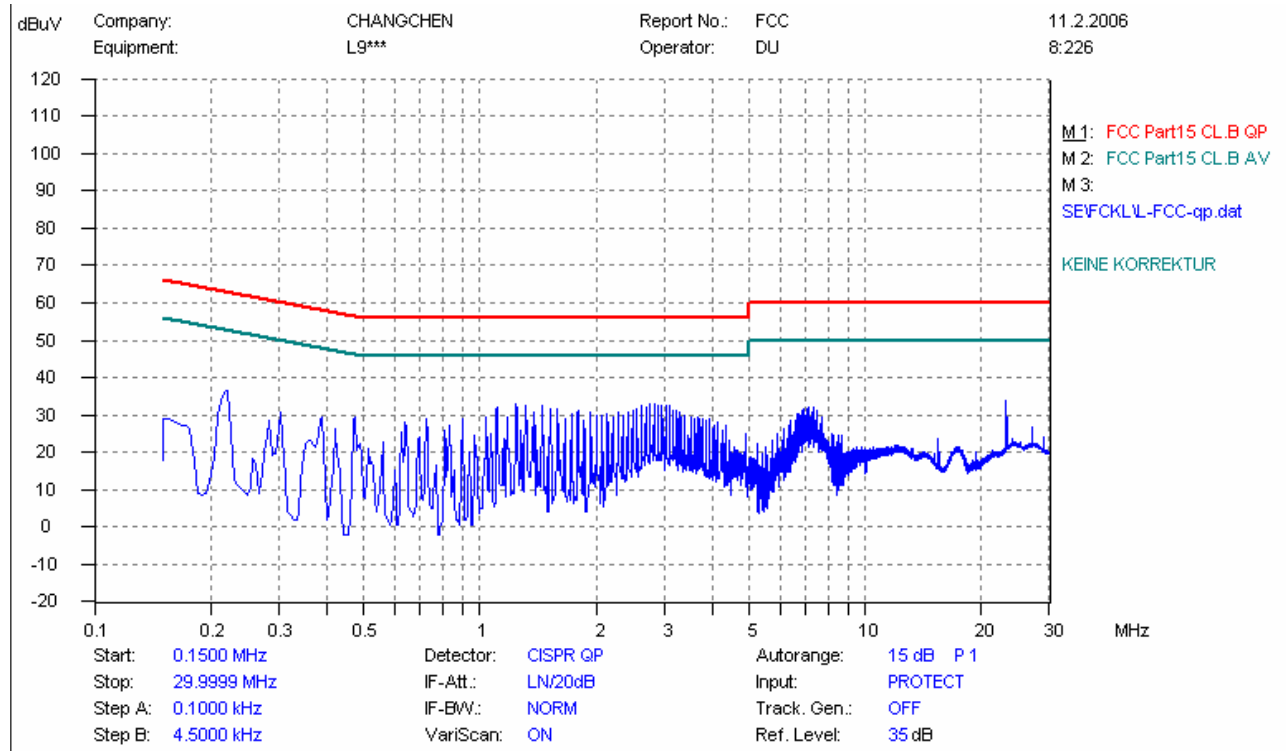
3. Mains terminal disturbance voltage, QP, L phase, Sample 2



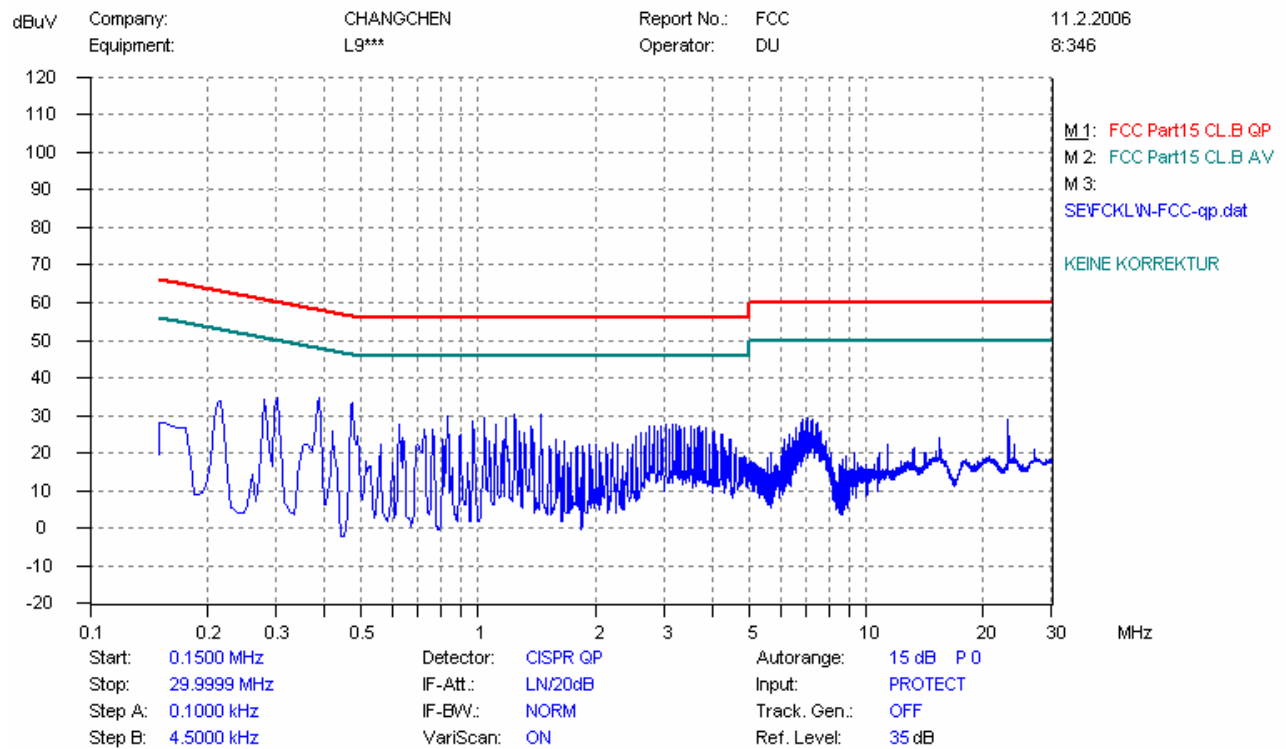
4. Mains terminal disturbance voltage, QP, N phase, Sample 2



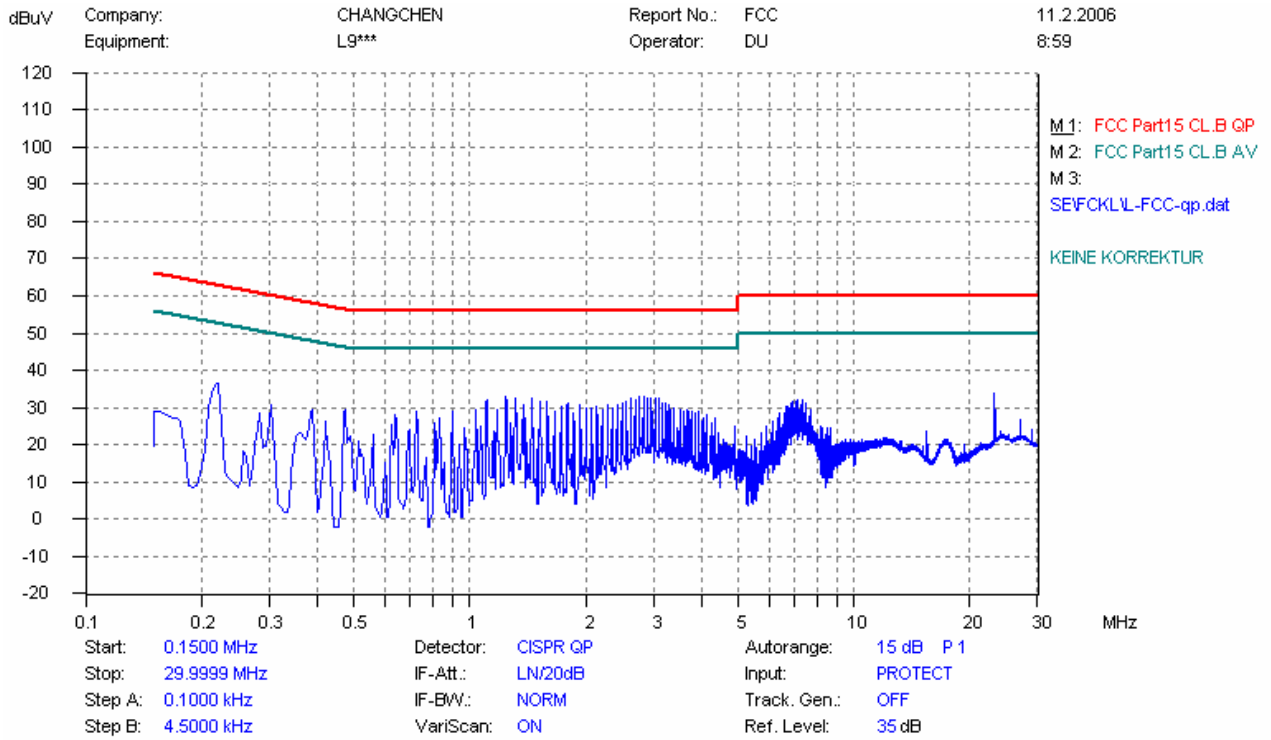
5. Mains terminal disturbance voltage, QP, L phase, Sample 3



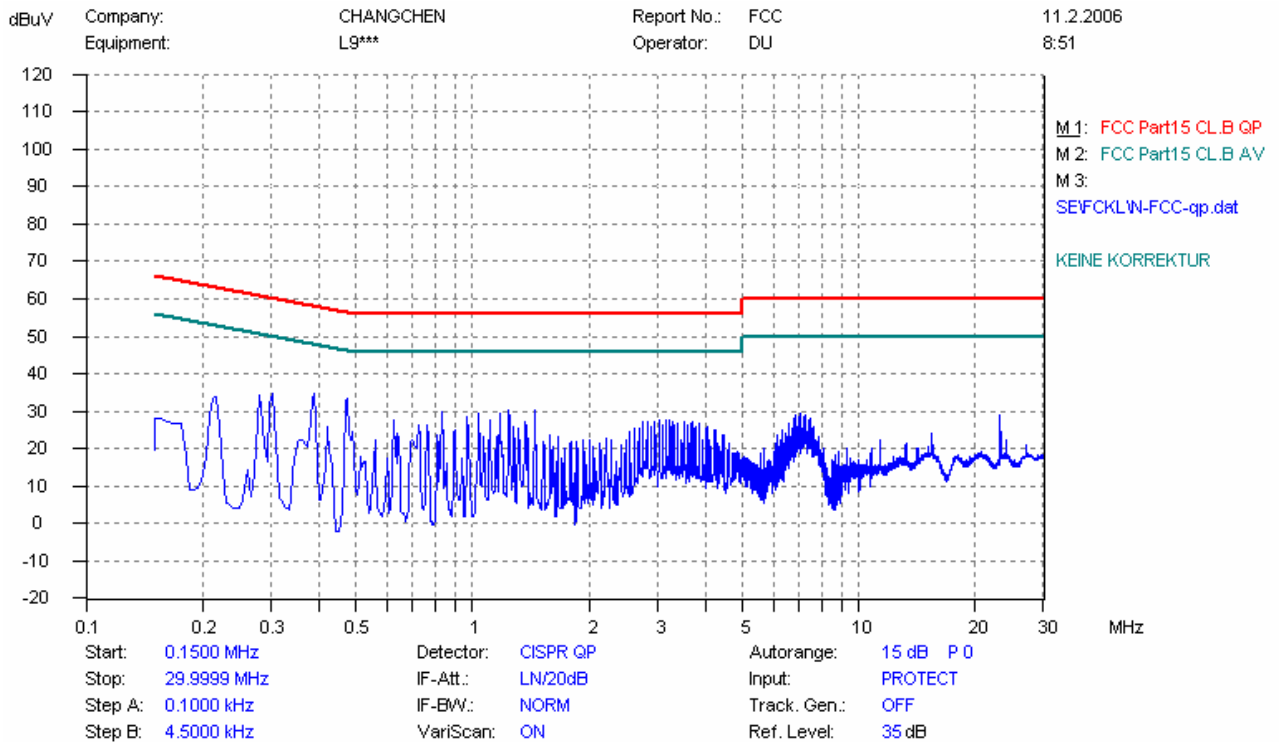
6. Mains terminal disturbance voltage, QP, N phase, Sample 3



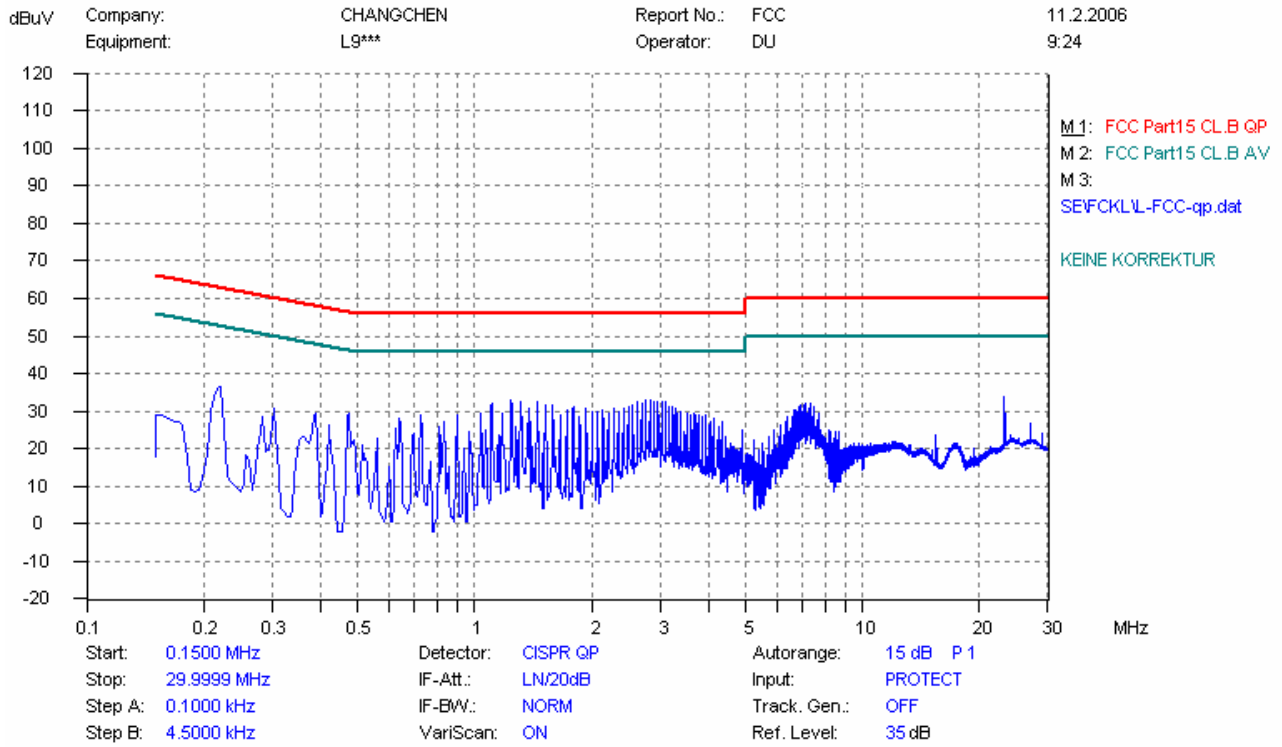
7. Mains terminal disturbance voltage, QP, L phase, Sample 4



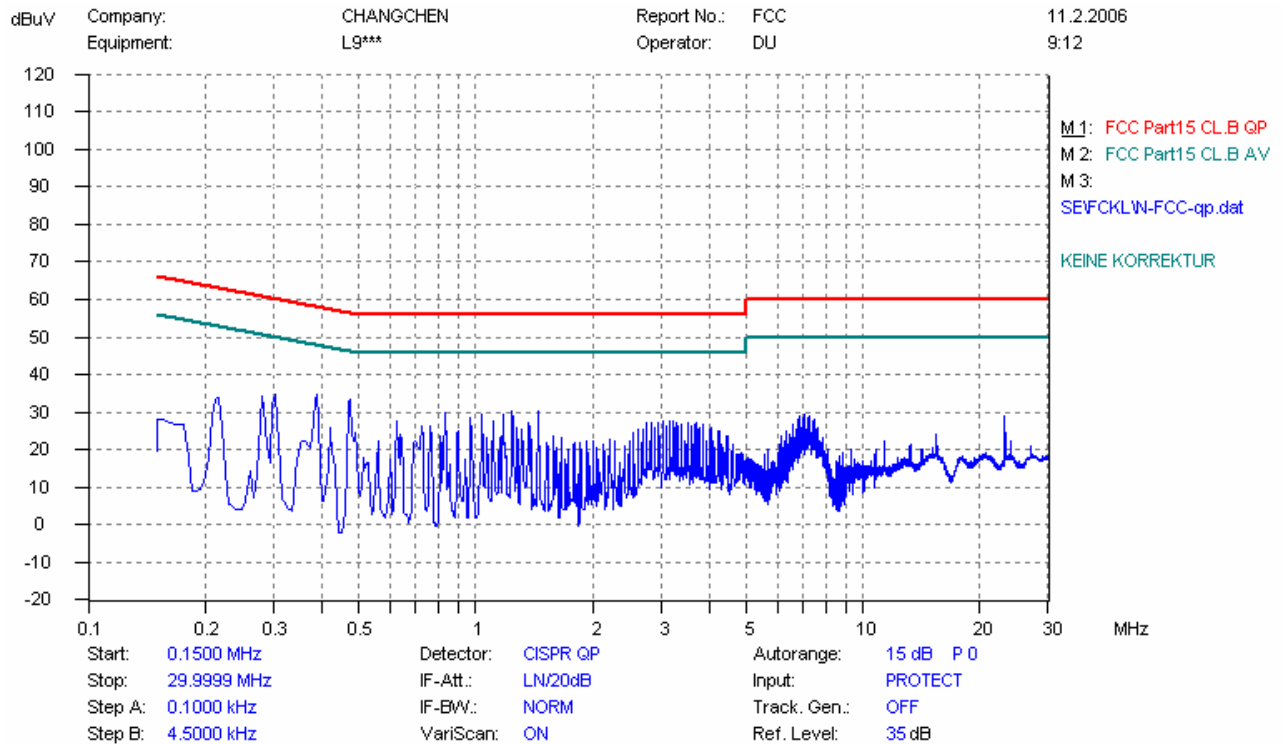
8. Mains terminal disturbance voltage, QP, N phase, Sample 4



9. Mains terminal disturbance voltage, QP, L phase, Sample 5



10. Mains terminal disturbance voltage, QP, N phase, Sample 5



5 Radiated Emission Test

5.1 Limits of Radiated Emission

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

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

NOTE:

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

5.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Test Receiver	ROHDE&SCHWARZ	ESIB26	100130	Jun.10, 2006	Jun.10, 2007
Ultra Broadband Ant.	ROHDE&SCHWARZ	HL562	100089	Jun.10, 2006	Jun.10, 2007
Semi-Anechoic Chamber	Albatross	H-249	P21505-016-001	Apr.18, 2006	Apr.18, 2007

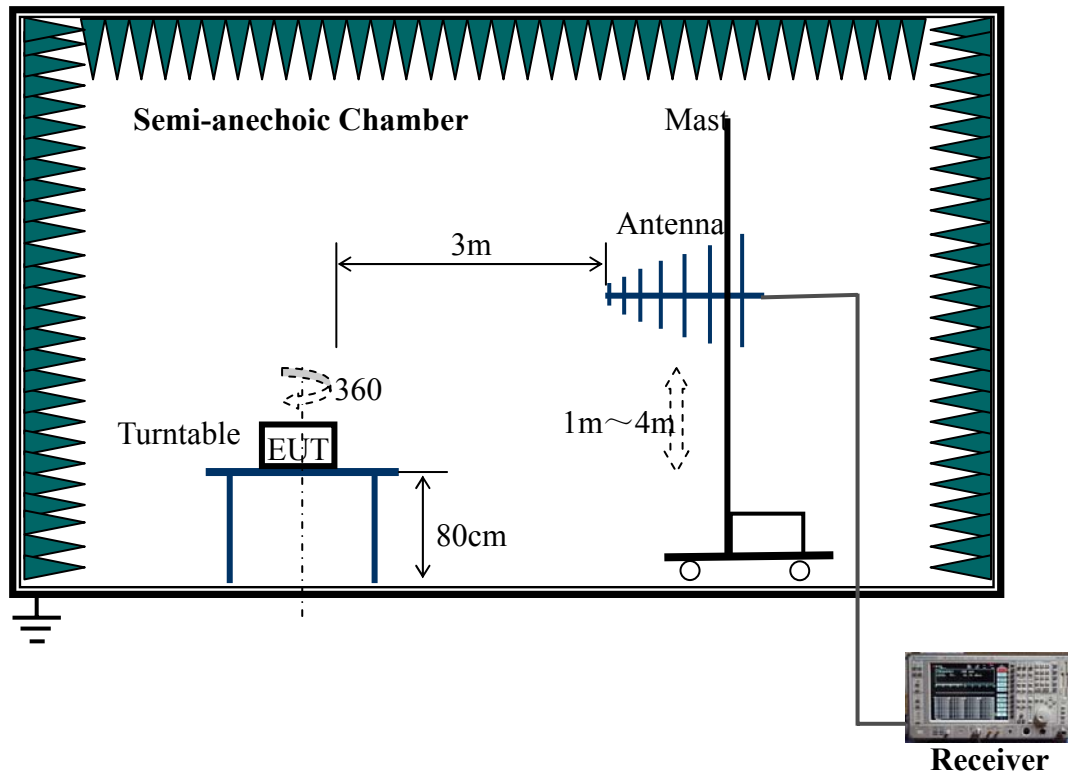
5.3 Test Procedure

- a. The EUT was placed on the top of a ratable 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detector Function and Specified Bandwidth with

Maximum Hold Mode.

- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emission that did not have 10 dB margin would be retested one by one using the quasi-peak method.

5.4 Test Setup



For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.

5.5 EUT Operating Conditions

The EUT was powered by 120V AC Mains.

The EUT was running Hwin.exe, at maximum brightness and contrast with resolution 1024*768 75Hz, scrolls "H" in 14 full screen.

The frequency range is: H-Sync 30-60 kHz, V-Sync 50-75 Hz

5.6 Test Results

Sample1:

No.	Frequency (MHz)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	40.56	Vertical	100	0	40	35.09
2	104.82	Vertical	100	0	43.5	35.35
3	118.20	Vertical	100	0	43.5	35.20
4	116.64	Horizontal	150	0	43.5	30.10
5	194.10	Horizontal	150	0	43.5	34.01

Sample2:

No.	Frequency (MHz)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	40.56	Vertical	100	0	40	35.06
2	114.06	Vertical	100	0	43.5	31.03

Sample3:

No.	Frequency (MHz)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	40.56	Vertical	100	0	40	35.19
2	104.82	Vertical	100	0	43.5	35.23
3	118.20	Vertical	100	0	43.5	35.29
4	116.64	Horizontal	150	0	43.5	30.11
5	194.10	Horizontal	150	0	43.5	34.01

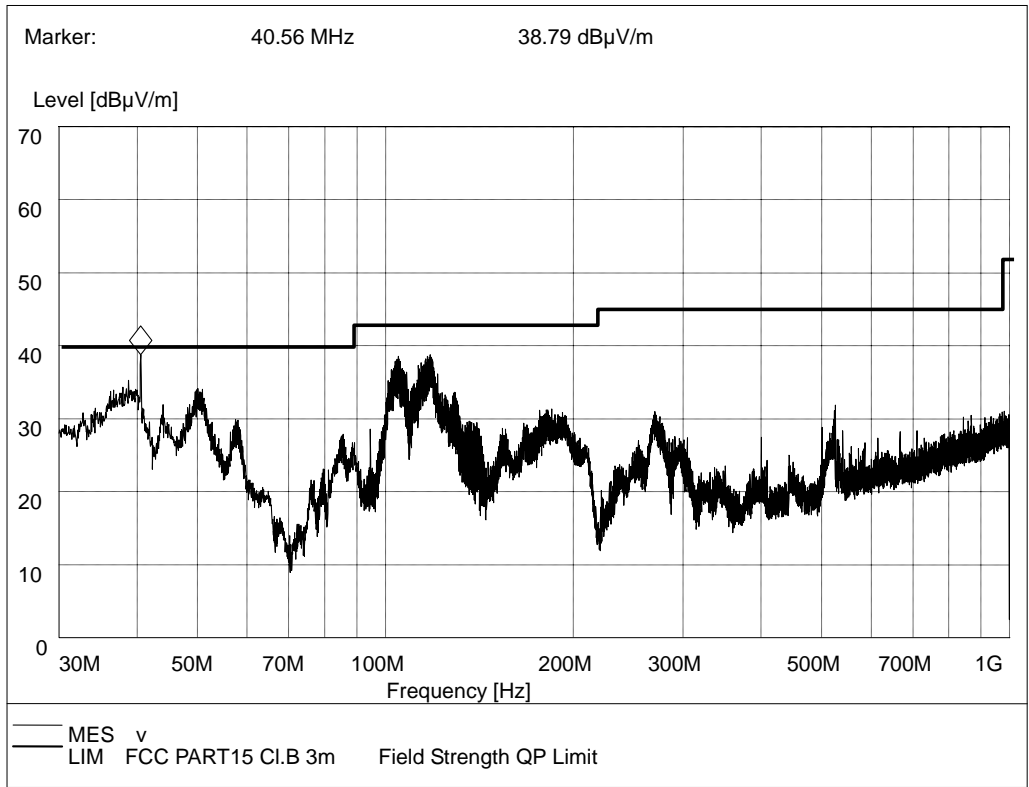
Sample4:

No.	Frequency (MHz)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	40.56	Vertical	100	0	40	33.22
2	104.82	Vertical	100	0	43.5	34.19
5	194.10	Horizontal	150	0	43.5	34.01

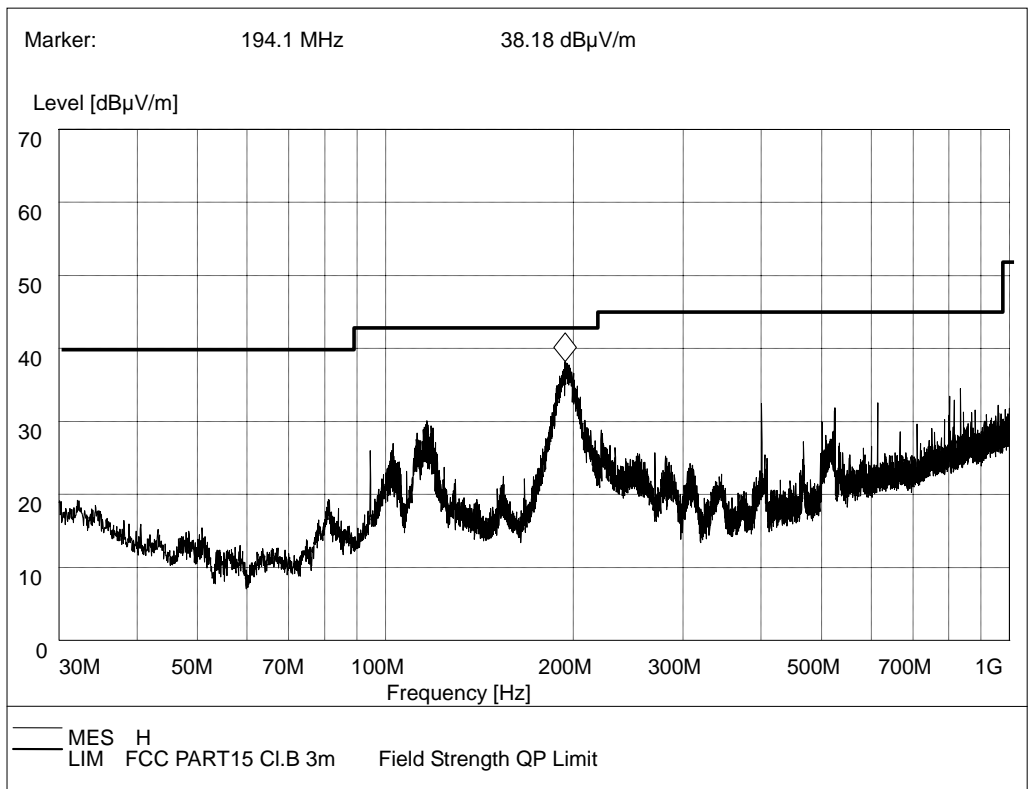
Sample5:

No.	Frequency (MHz)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	40.56	Vertical	100	0	40	33.19
2	104.82	Vertical	100	0	43.5	34.23

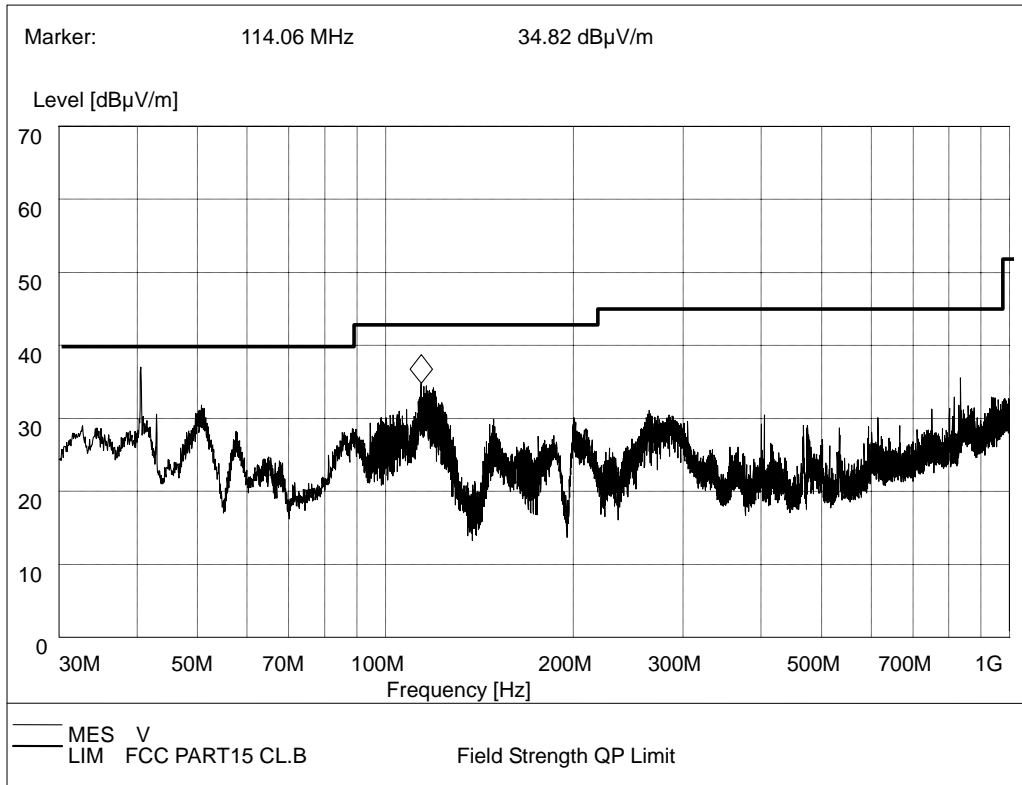
1. Radiation disturbances, antenna polarization: Vertical, Sample1



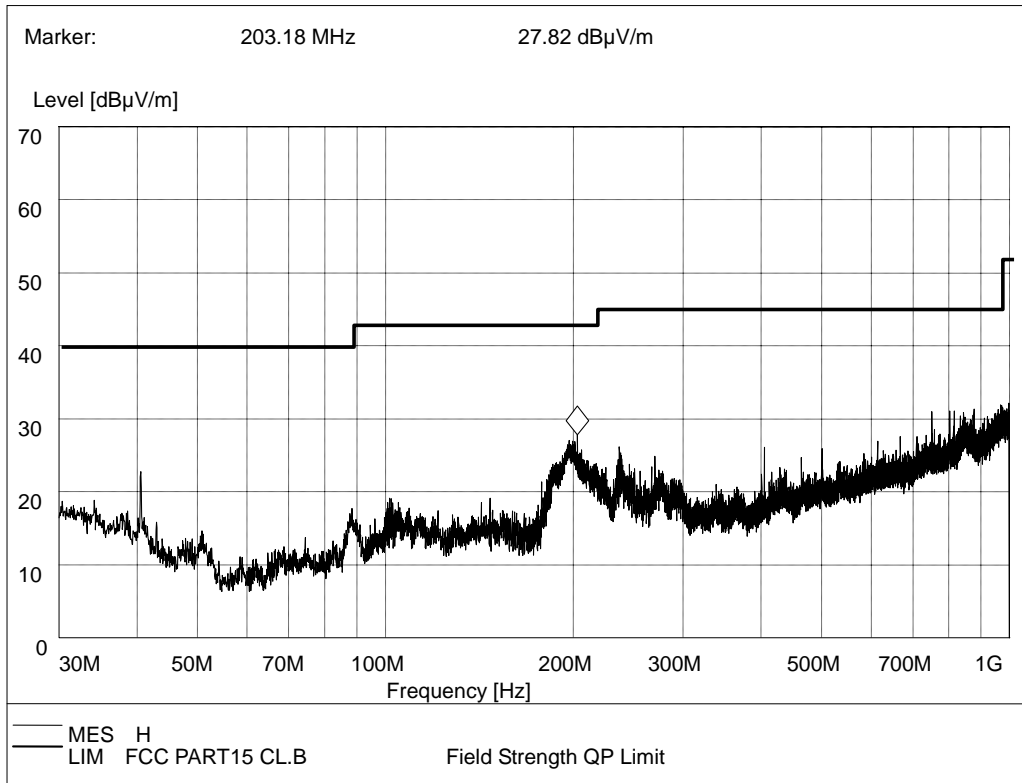
2. Radiation disturbances, antenna polarization: Horizontal, Sample1



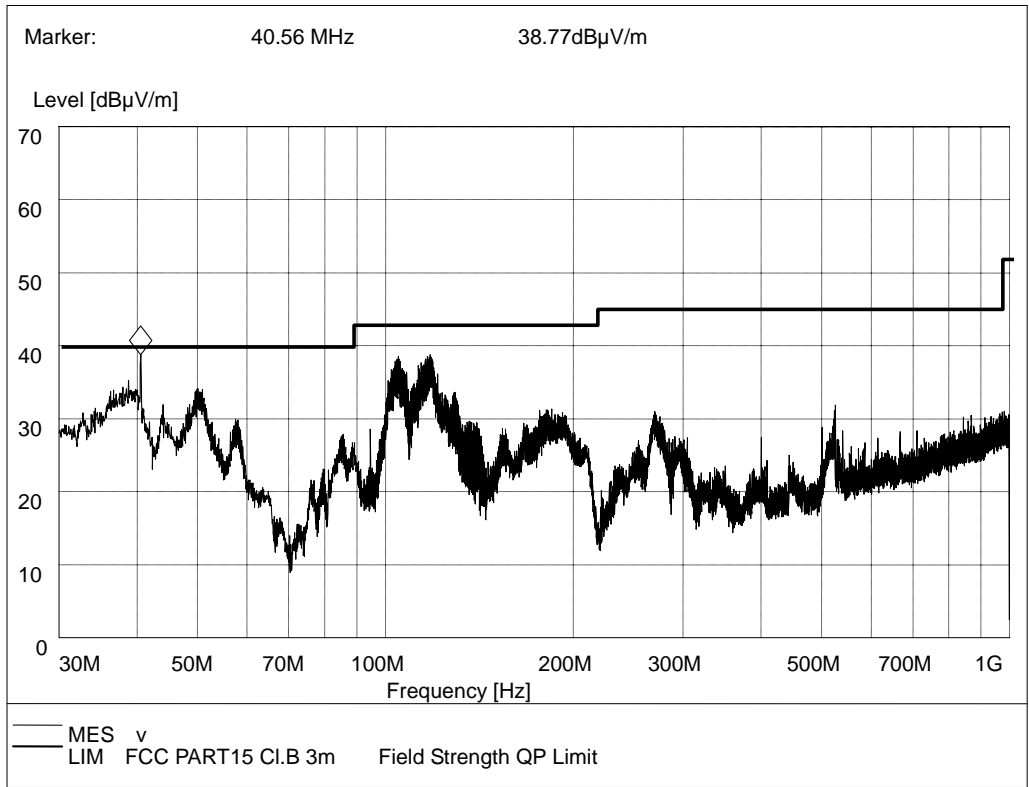
3. Radiation disturbances, antenna polarization: Vertical, Sample2



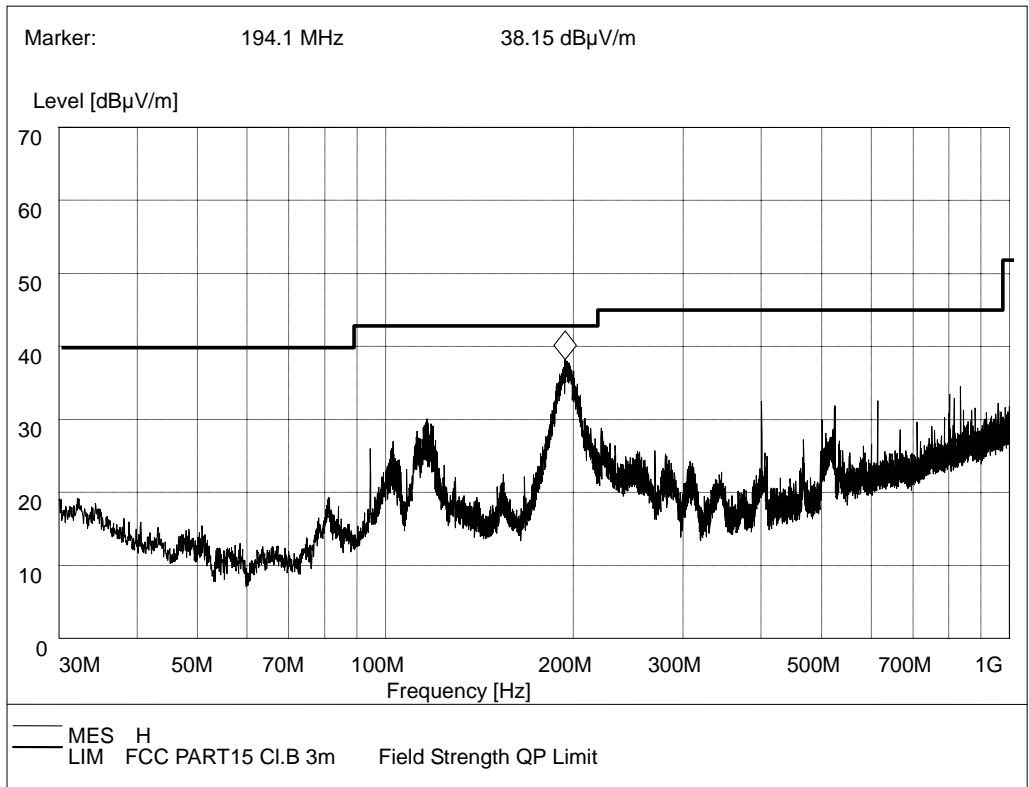
4. Radiation disturbances, antenna polarization: Horizontal, Sample2



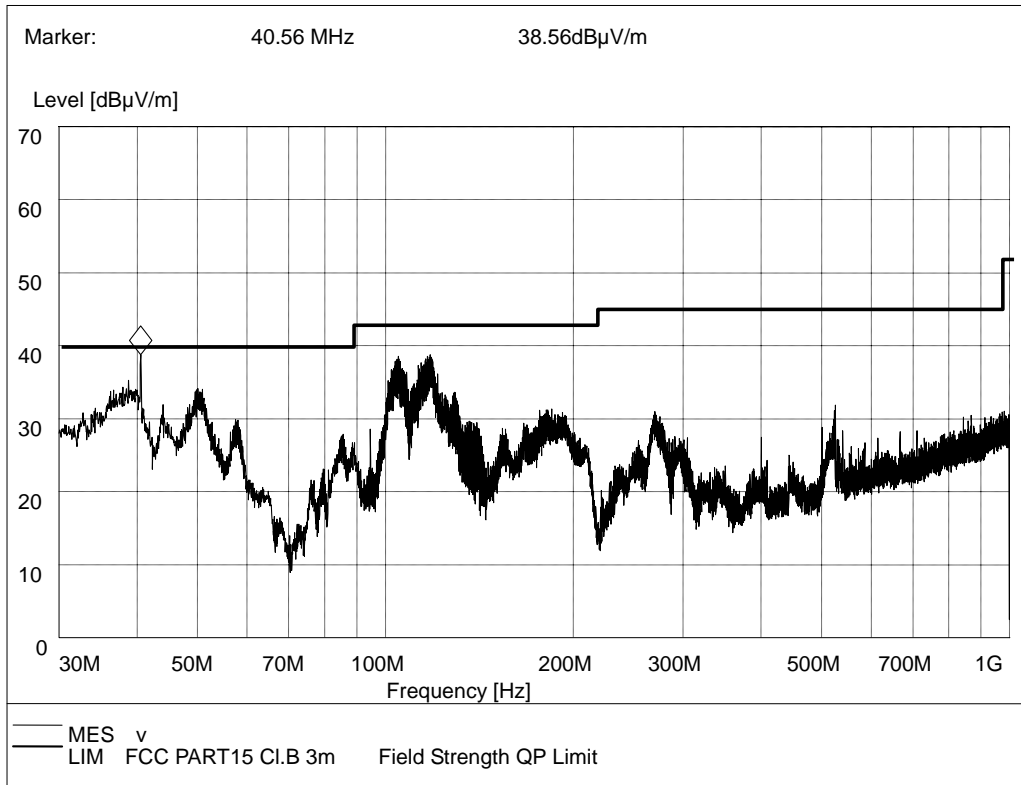
5. Radiation disturbances, antenna polarization: Vertical, Sample3



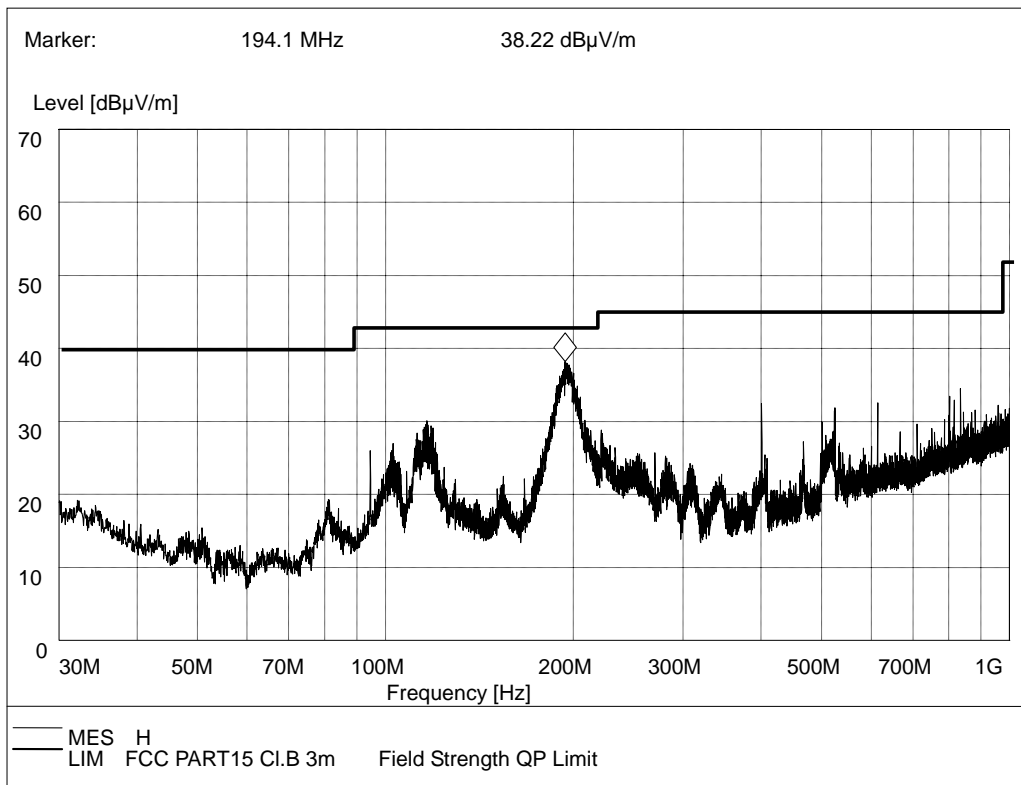
6. Radiation disturbances, antenna polarization: Horizontal, Sample3



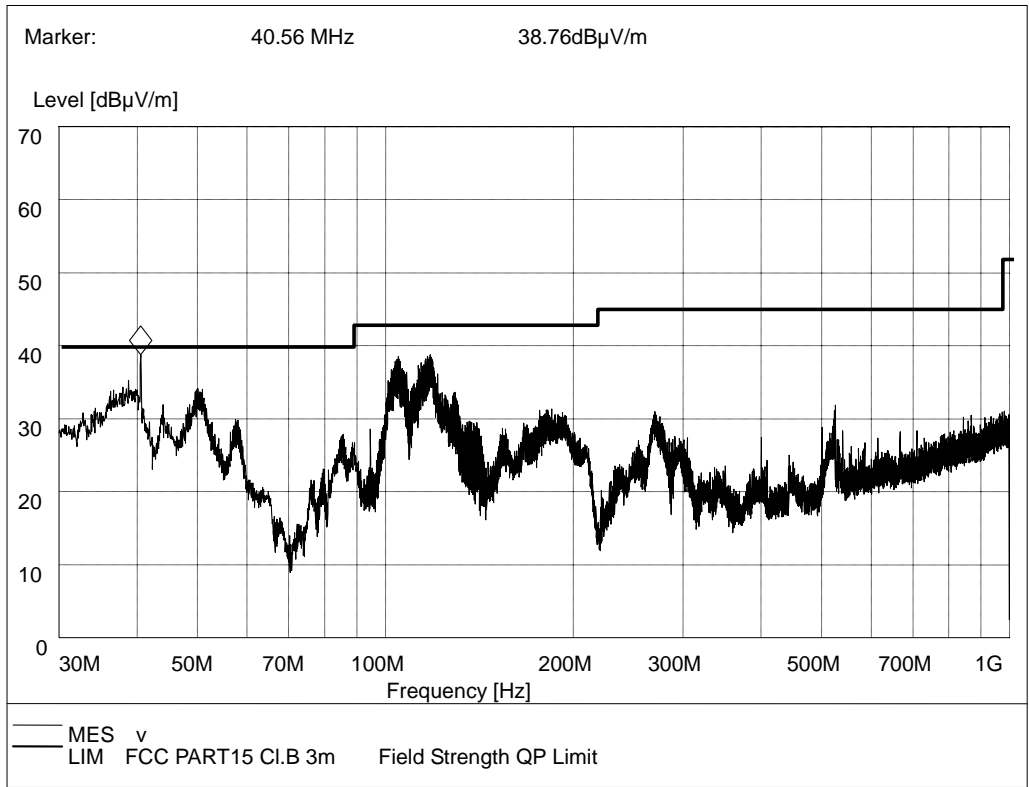
7. Radiation disturbances, antenna polarization: Vertical, Sample4



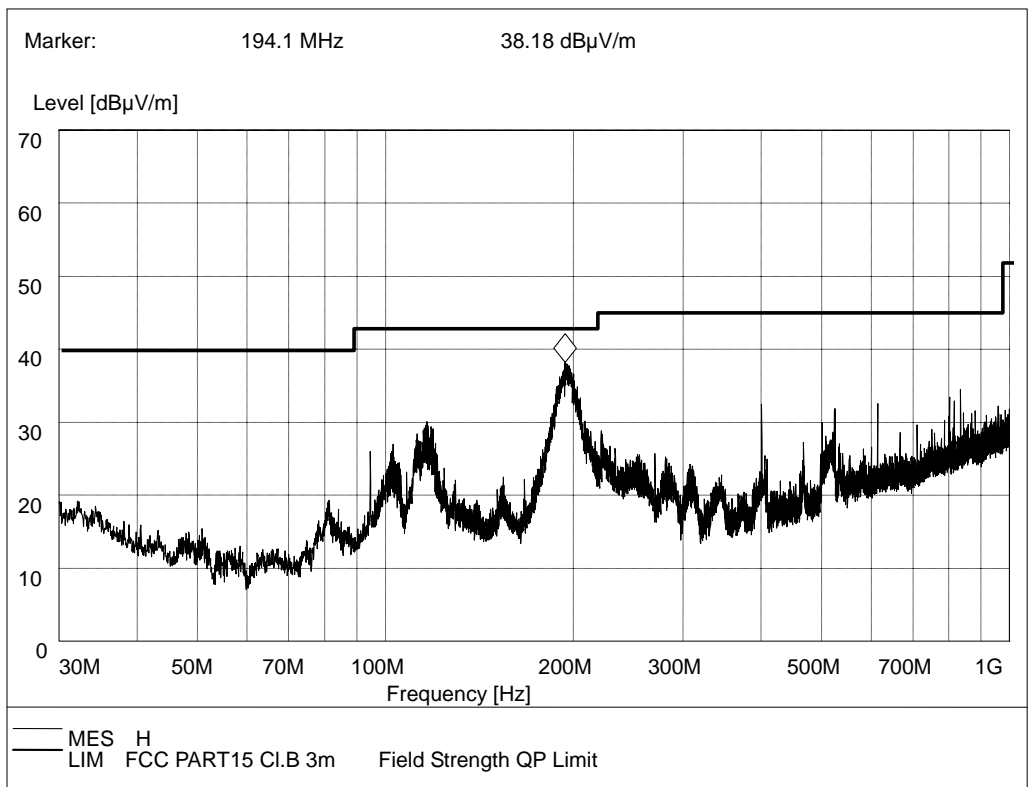
8. Radiation disturbances, antenna polarization: Horizontal, Sample4



9. Radiation disturbances, antenna polarization: Vertical, Sample5

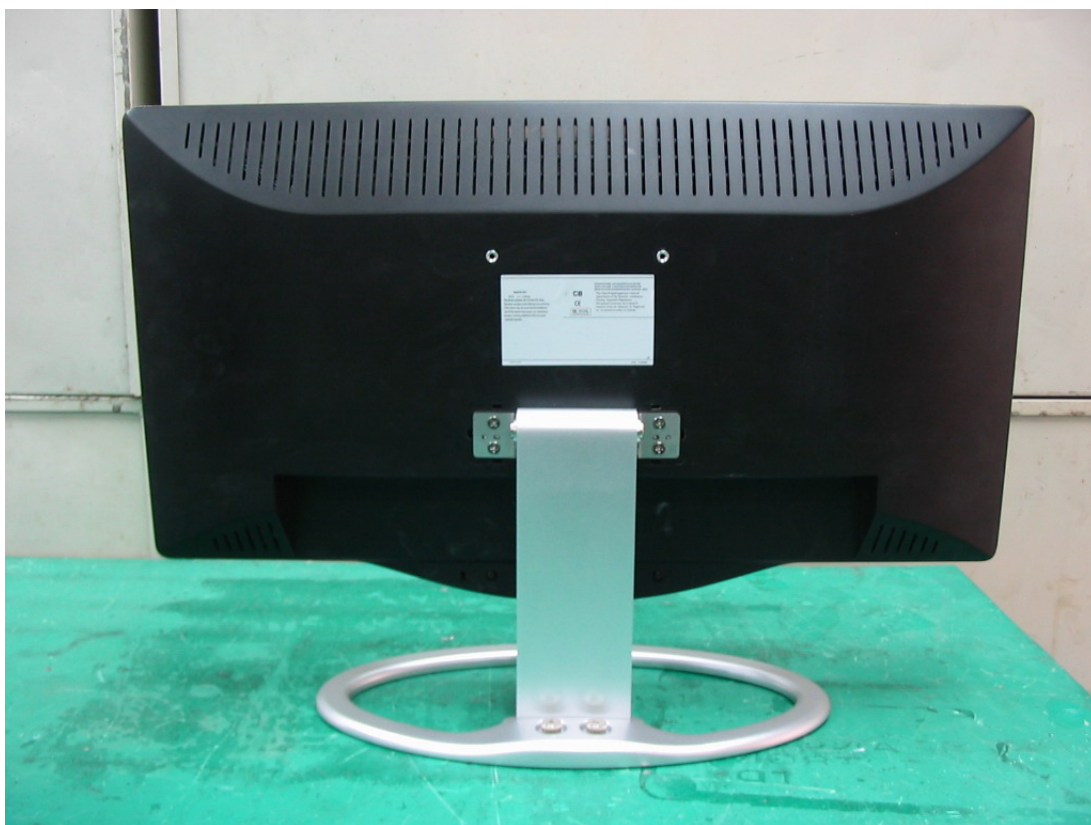


10. Radiation disturbances, antenna polarization: Horizontal, Sample5



Appendix I: Photographs of the EUT

1. Appearance







2. Panel
BOE HT190E01-100



SAMSUNG LTM190EX-L01



SAMSUNG LTM190M2-L01



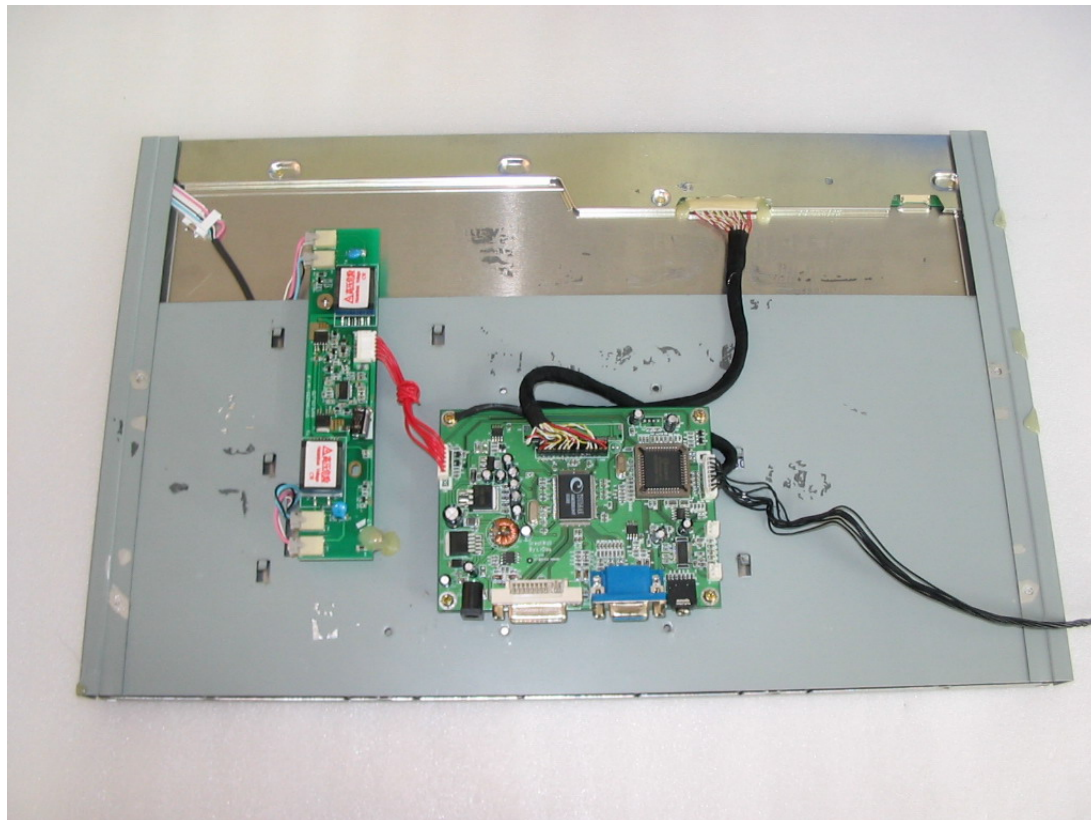
CHIMEI M190A1-L01



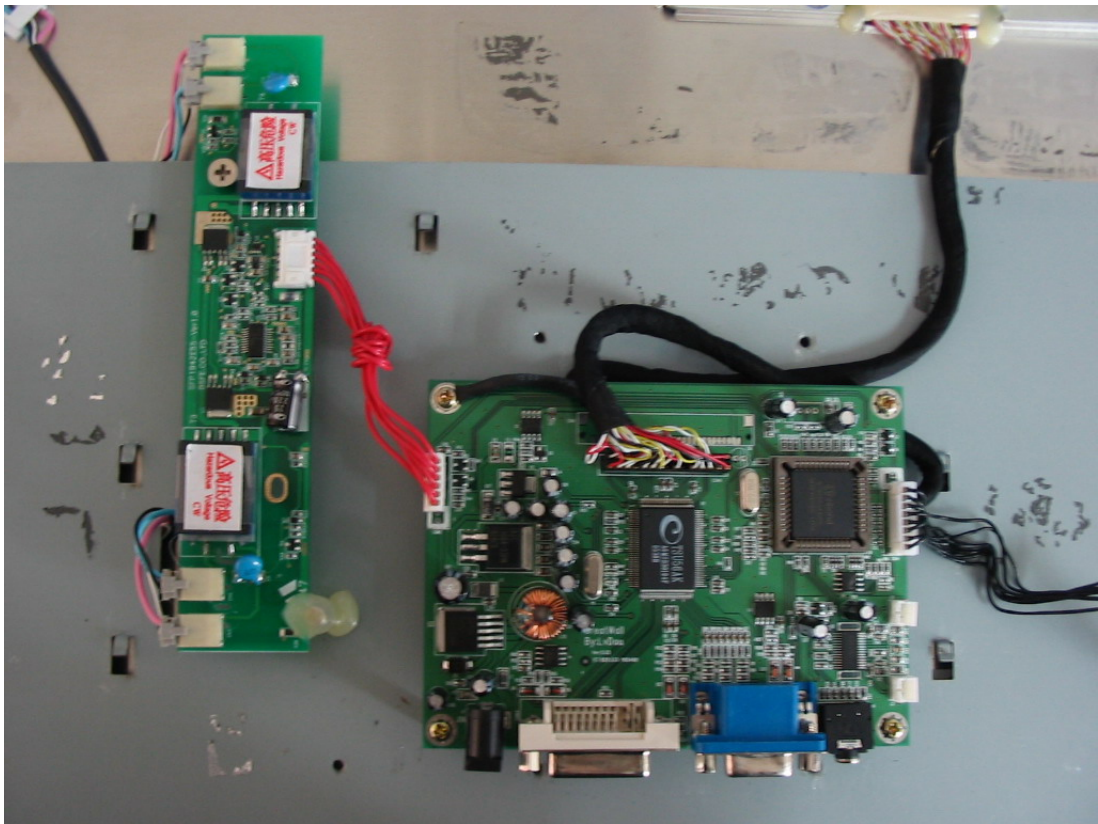
CHIMEI M190A1-L02



3. Inside



4. Main board



4. Adaptor

Adapter 1-- WDS060120



Adapter 2-- PAA060F



Adapter 3-- SAWA-01-483



Appendix II: Photographs of Test Configuration

1. Mains Terminal Disturbance Voltage Measurement



2. Radiated Field Strength Measurement

