

TEST REPORT

FCC PART 15 Class B

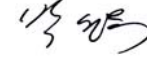
Applicant	Trade Name	D&T Inc.		
	Address	59-9, Jang Dong, Yuseong Gu, Daejeon, 305-343 South Korea		
	Telephone Number	+82 42 360 0820	Fax Number	+82 42 360 0830
Product	Name	52" Dual Color TFT LCD Monitor		
	Model Name	FS-S5202C		
	Manufacturer	D&T Inc.		
Test Date		2009 01. 14. - 2009 01. 19.		
Issued Date		2009 01. 29.		
Test Procedure		ANSI C63.4-2003		
Applicable Regulation		FCC Part 15		
Equipment Class		Class B		
Test Result		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Engineer



Young, Choi

Chief Engineer



Seongwook, Park

CHUNGBUK TECHNOLOGICAL UNIVERSITY

I, the undersigned, hereby declare that the equipment specified above conforms to the above FCC Rule(s) and Regulation(s) Part 15 as described in the attached test report.

This test report contains only the result of a single test of the sample supplied for the examination.

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1. Test Laboratory

1.1 General Information

Name of Laboratory	CHUNGBUK TECHNOPARK
Representative	Jongsung, Lim
Address	685-3 Yangcheong-ri, Ochang-eup, Cheongwon-gun, Chungcheongbuk-do, Korea
Telephone Number	043-219-5890
Fax Number	043-219-5899
Homepage	www.cbtp.or.kr

1.2 Location of Test Laboratory

Address	685-3 Yangcheong-ri, Ochang-eup, Cheongwon-gun, Chungcheongbuk-do, Korea
Telephone Number	043-219-5890
Fax Number	043-219-5899

1.3 Registration Information

Test item(s)	Facility	Registration Number
Radiated Emission Measurement	10m semi-anechoic chamber	647924
Conducted Emission Measurement	Shielded room	

2. Test Rule

2.1 Test Rule Part(s)

Test item(s)	Test Rule Part(s)	Test Result	
Conducted Emission Measurement	Part 15.107	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Radiated Emission Measurement	Part 15.109	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

2.2 Equipment Under Test(EUT) Modifications

No modifications were made to the EUT in order to achieve and maintain compliance to the standards described in this report.

3. Description for Equipment Under Test(EUT)

3.1 AC Power

3.1.1 AC input voltage : AC 100 to 240 Volts (Universal power)

3.1.2 AC input frequency : 50~60Hz \pm 3Hz

3.2 Video and Sync Signal

3.2.1 Video signal

A. Horizontal frequency : 25 ~ 90KHz

B. Vertical frequency : 24 ~ 120Hz

C. Applicable maximum pixel frequency : 170MHz(Analog), 165MHz(Digital)

D. Maximum resolution : 1920x1080 / 60Hz

3.2.2 Signal connectors

A. HDMI type A x3x2(Dual) : HDMI input

B. 15p D-Sub(Female, 3row) x1x2(Dual) : Analog RGB input

C. 9p D-Sub (Female) x1x2(Dual) : RS232C Input

D. 9p D-Sub (Male) x1x2(Dual) : RS232C Output

E. 15p D-Sub(Male, 2row) x1x(Dual) : Audio AMP signal input

F. AC Inlet x1x2(Dual) : main AC power input

3.3 LCD Panel Specifications(Left/Right individual)

Item		SPECIFICATION	UNIT	NOTE
Display area	diagonal	1321	mm	
	viewable	1152.0(H) \times 648.0(V)	mm	
Driver element		a-Si TFT Active matrix		
Number of Pixels		1920x1080, 2.07Million	pixels	
Pixel Pitch		0.6(H) \times 0.6(V)	mm	
Pixel arrangement		R. B, G Vertical Stripe		
Display colors		16.7M (RGB 8-bit data)		
Viewing angle(max)		178(H), 178(V)	degrees	120 minutes after lighting on
Display mode		Normally black		

4. Configuration of Test System

4.1 Host System Configuration

Description	Model Name	Serial Number	Manufacturer	Remarks
PC	OPTIPLEX 760	6TSKKBX	DELL	Class B
Printer	ML-2250G	BD35BKDL919186X	SAMSUNG	Class B
Keyboard	L30U	-	DELL	Class B
Mouse	XN966	HS851131Q2H	DELL	Class B
52" Dual Color TFT LCD Monitor	FS-S5202C	-	D&T Inc.	EUT

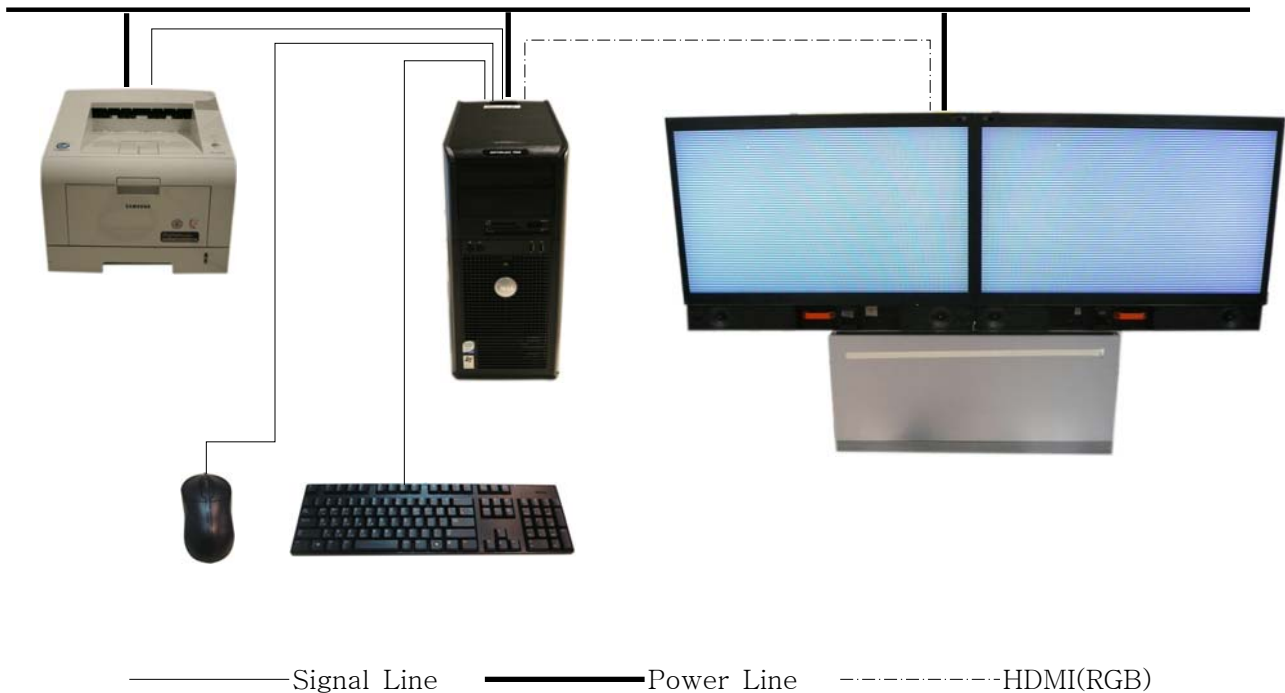
4.2 Type of Cables

Port / From		Port / To		Remarks	
Description	I/O Port	Description	I/O Port	Length[m]	Shielded(Y/N)
EUT	HDMI	PC	DVI	2.0	Y
EUT	RGB	PC	DVI	1.8	Y
PC	LPT	Printer	LPT	1.8	Y
PC	USB	Mouse	-	1.8	Y
PC	POWER	-	-	1.8	N
EUT	POWER	-	-	1.8	N

4.3 Operation of Equipment Under Test(EUT)

The Equipment Under Test was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner and which tends to maximize its emission level in a typical application.

4.4 Setup drawing(s)



5. Test Limits

5.1 Conducted Emission Measurement Limits

Frequency (MHz)	Class B Limits (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

5.2 Radiated Emission Measurement Limits

Frequency (MHz)	Class B Limit (dBuV/m)
30 - 230	30 (Quasi-peak) @ 10m
230 - 1000	37 (Quasi-peak) @ 10m
Above 1000	54 (Average) @ 3m

6. Test Procedure and Results

6.1 Radiated Emission Measurement

6.1.1 Test Equipments

Description	Model Name	Manufacturer	Serial Number	Cal. Due	Used
Test Receiver	ESIB26	Rohde & Schwarz	100359	2009.05.26	■
Antenna	CBL6112D	Schaffner	22022	2010.04.21	■
Antenna Master	MA 4000	inn-co	-	-	■
Turn table	DT 3000	inn-co	-	-	■

6.1.2 Test place : 10m semi-anechoic chamber

6.1.3 Test Environments : Temperatures 18.2°C, Relative Humidity 32.5%

6.1.4 Test Procedure

Final measurements of radiated emission were made on the 10m semi-anechoic chamber. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emission in amplitude, direction and frequency. This process was repeated during final radiated emission measurements on the 10m semi-anechoic chamber range, at each frequency, in order to ensure that maximum emissions amplitudes were attained.

The radiated emission test was performed with EUT exercise program loaded, and the emissions were scanned between 30MHz to 1000MHz using a ESCI3 test receiver. The test receiver's 6dB bandwidth was set to 120kHz, and the receiver was operated in the CISPR quasi-peak detection mode.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum emission levels. Measurements were taken using both HORIZONTAL and VERTICAL antenna polarization, herein referred to as H and V, respectively.

$$F1[\text{dBuV/m}] = F2[\text{dBuV}] + AF[\text{dB/m}] + CL[\text{dB}]$$

F1: Final Field Strength F2:Reading AF: Antenna Factor CL: Cable Factor

6.2 Test Results : ☒ Pass ☐ Fail

Test Date : 2009 01. 14.

6.2.1 HDMI mode

Frequency (MHz)	Reading (dBuV)	Polarity	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
60.19	14.10	V	2.95	6.19	0.41	30.00	20.70	9.30
73.62	15.80	V	2.00	7.41	0.49	30.00	23.70	6.30
112.10	7.50	V	1.05	12.51	0.49	30.00	20.50	9.50
156.90	7.90	H	3.00	11.81	0.49	30.00	20.20	9.80
184.27	2.60	H	3.05	11.80	0.50	30.00	14.90	15.10
193.08	9.30	H	3.95	12.08	0.52	30.00	21.90	8.10
224.83	7.40	V	1.05	13.79	0.51	30.00	21.70	8.30
662.05	6.90	V	2.95	22.00	0.50	37.00	29.40	7.60
735.70	10.00	V	3.00	22.40	0.50	37.00	32.90	4.10

6.2.2 RGB mode

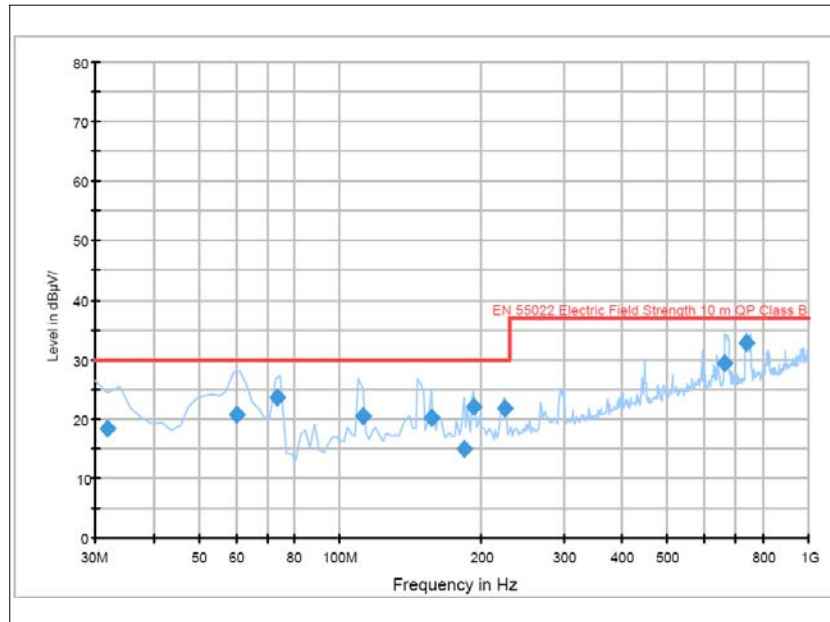
Frequency (MHz)	Reading (dBuV)	Polarity	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
75.08	13.50	V	2.05	7.69	0.41	30.00	21.60	8.40
147.04	7.90	V	1.05	12.01	0.49	30.00	20.40	9.60
224.53	6.90	V	1.00	13.81	0.49	30.00	21.20	8.80
673.05	8.00	V	3.05	22.01	0.49	37.00	30.50	6.50
734.19	8.90	V	2.95	22.40	0.50	37.00	31.80	5.20
808.76	5.80	H	1.00	23.18	0.52	37.00	29.50	7.50

Note

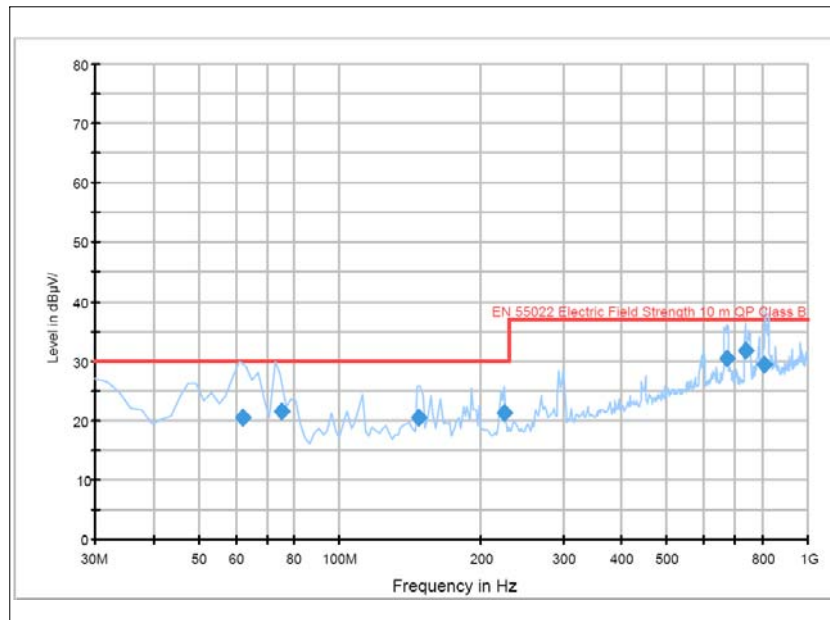
1. Margin (dB)=Limit (dBuV) - Level (dBuV)
2. If no frequencies are specified in the tables, no measurement for quasi-peak or average was necessary.

6.2.3 Graphical representation of radiated emissions - HDMI mode

<radiated emissions>



6.2.4 Graphical representation of radiated emissions - RGB mode



6.3 Conducted Emission Measurement

6.3.1 Test Equipments

Description	Model Name	Manufacturer	Serial Number	Cal. Due	Used
Spectrum Analyzer	ESCI3	Rohde & Schwarz	100545	03, 30, 2009	■
LISN 1	NNLK8129	Schwarzbeck	8129-162	03, 28, 2009	■
LISN 2	ESH2-Z5	Rohde & Schwarz	100146	03, 28, 2009	■

6.3.2 Test place : 10 m Semi-anechoic chamber

6.3.3 Test Environments : Temperatures 17.5°C, Relative Humidity 31%

6.3.4 Test Procedure

Conducted emission levels were measured on each current-carrying line with the test receiver operating in the CISPR quasi-peak mode (or peak mode if applicable). The receiver's 6dB bandwidth was set to 9kHz. The initial step in collecting conducted data is a test receiver peak scan of the measurement range. If the conducted emission exceed the average limit with the instrument set to the quasi-peak mode, the measurements are made in the average mode. The emission was scanned from 150kHz to 30MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. Quasi-peak readings are distinguished with a "QP". The conducted emission test was performed with the EUT exercise program loaded, and the emissions were scanned between 150kHz to 30MHz on the HOT side and NEUTRAL side, herein referred to as H and N, respectively.

6.4 Test Results : ☒ Pass ☐ Fail

Test Date : 2009 01. 19.

6.4.1 HDMI Mode

Frequency (MHz)	Correction Factor		Line	Quasi-peak			Average		
	LISN	Cable		Limit (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Reading (dBuV)	Level (dBuV)
0.150	9.75	0.15	H	66.00	45.50	55.40	56.00	25.20	35.10
0.217	9.75	0.15	H	62.90	28.70	38.60	52.90	25.00	34.90
0.278	9.77	0.13	H	60.90	26.70	36.60	50.90	21.40	31.30
0.480	9.77	0.13	N	56.30	10.80	20.70	46.30	8.50	18.40
4.464	10.03	0.27	N	56.00	18.50	28.80	46.00	10.70	21.00
5.611	10.10	0.30	H	60.00	26.80	37.20	50.00	12.60	23.00
5.898	10.11	0.29	N	60.00	26.40	36.80	50.00	10.10	20.50
6.260	10.10	0.40	H	60.00	24.70	35.20	50.00	13.60	24.10
8.109	10.07	0.43	N	60.00	18.60	29.10	50.00	12.30	22.80
18.892	9.99	0.81	N	60.00	14.50	25.30	50.00	4.20	15.00
28.693	10.12	0.88	N	60.00	20.50	31.50	50.00	8.90	19.90
30.000	10.15	1.65	H	60.00	21.40	33.20	50.00	9.50	21.30

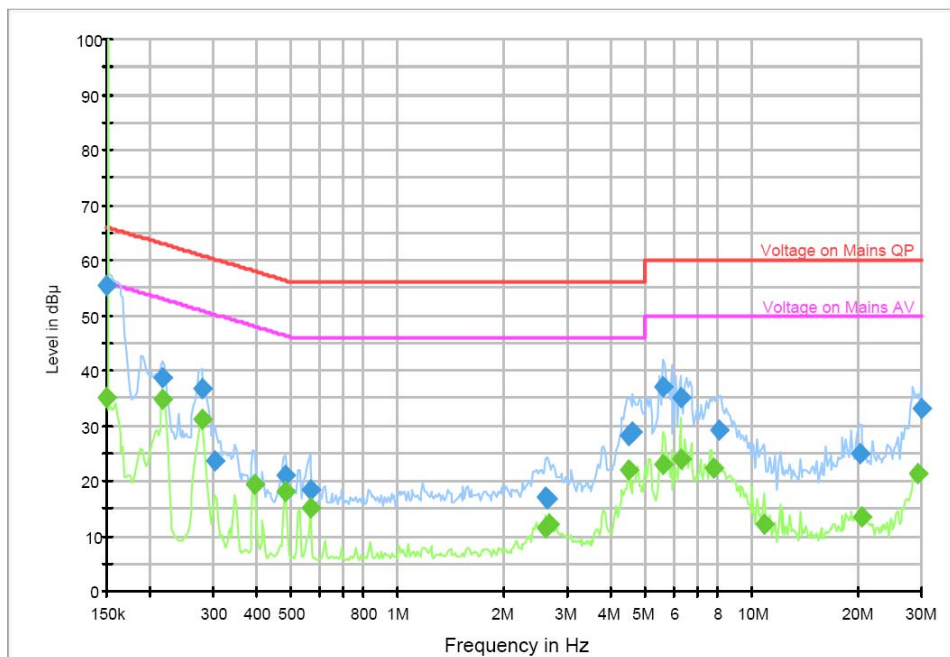
6.4.2 RGB Mode

Frequency (MHz)	Correction Factor		Line	Quasi-peak			Average		
	LISN	Cable		Limit (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Reading (dBuV)	Level (dBuV)
0.150	9.75	0.15	N	66.00	46.50	56.40	56.00	25.70	35.60
0.190	9.77	0.13	H	64.00	31.50	41.40	54.00	16.10	26.00
0.215	9.75	0.15	N	63.00	26.60	36.50	53.00	24.70	34.60
0.275	9.77	0.13	H	61.00	26.80	36.70	51.00	21.90	31.80
4.508	10.03	0.27	N	56.00	18.60	28.90	46.00	10.20	20.50
4.833	10.06	0.34	H	56.00	17.20	27.60	46.00	10.20	20.60
4.882	10.06	0.24	N	56.00	16.60	26.90	46.00	9.60	19.90
5.668	10.10	0.30	N	60.00	27.00	37.40	50.00	14.60	25.00
5.839	10.11	0.39	H	60.00	27.50	38.00	50.00	13.50	24.00
6.260	10.10	0.30	N	60.00	24.80	35.20	50.00	16.00	26.40
6.515	10.10	0.40	H	60.00	22.80	33.30	50.00	12.60	23.10
29.858	10.15	1.65	H	60.00	22.40	34.20	50.00	9.50	21.30

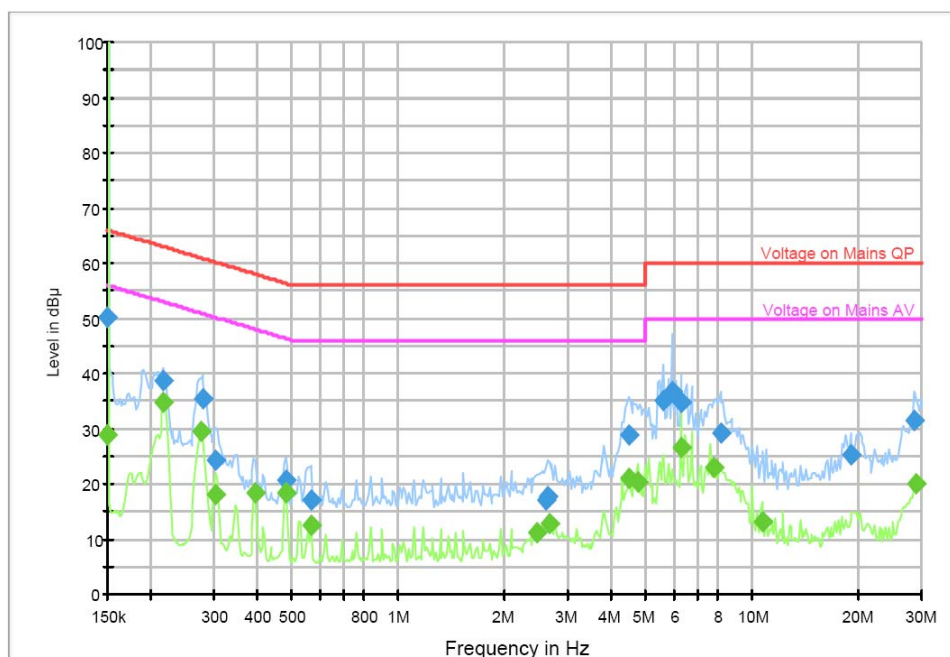
6.4.3 Graphical representation of conducted emissions - HDMI mode

* ◆ : Quasi-Peak ◆ : Average

* HOT Line



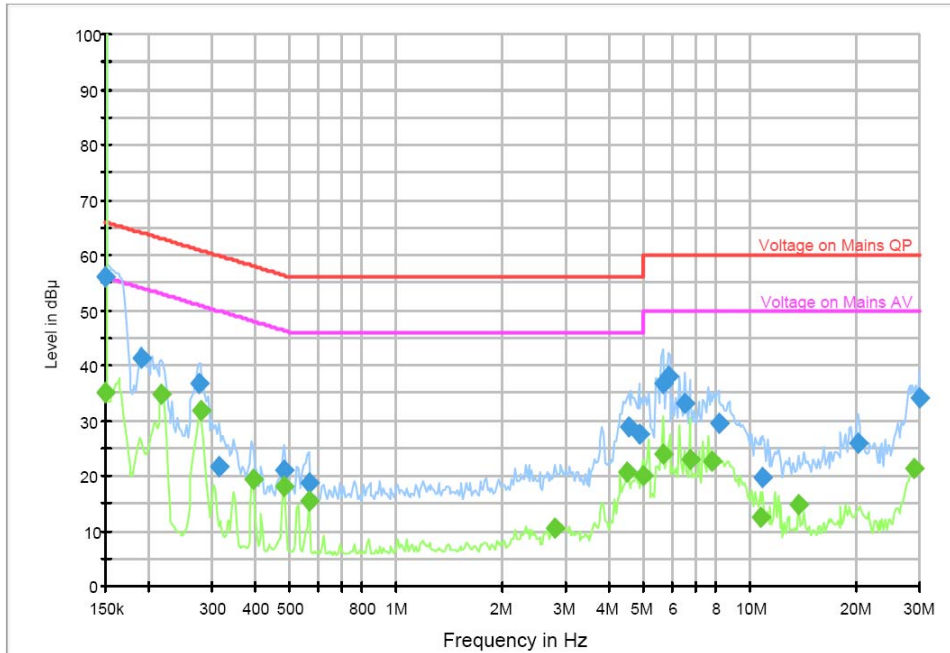
* NEUTRAL Line



6.4.4 Graphical representation of conducted emissions - RGB mode

* ◆ : Quasi-Peak ◆ : Average

* HOT Line



* NEUTRAL Line

