



	ESTECH Co., Ltd. Rm 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	   	Electromagnetic Interference Test Report

Test Report for FCC

FCC ID:XXV-NIKAO

Report Number		ESTF151008-004			
Applicant	Company name	VIZEN TECHNOLOGY, INC			
	Address	# 502 YUKSUNG BUILDING, 706-25 YEOKSAM-DONG, GANGNAM-GU, SEOUL, KOREA			
	Telephone	82-70-7734-3203			
Product	Product name	LCD TV/MONITOR			
	Model name	NIKAO	Manufacturer	VIZEN TECHNOLOGY, INC	
	Serial number	NONE	Country of origin	KOREA	
Test date	7-Jul-10		Date of issue	5-Aug-10	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 (2008) , ANSI C 63.4 2003				
Test item	<input checked="" type="checkbox"/> Conducted Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result	OK
	<input checked="" type="checkbox"/> Radiated Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result	OK
Measurement facility registration number		94696			
Tested by	Senior Engineer J.H.KIM  (Signature)				
Reviewed by	Engineering Manager J.M.Yang  (Signature)				
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable				
* Note - This test report is not permitted to copy partly without our permission - This test result is dependent on only equipment to be used - This test result based on a single evaluation of one sample of the above mentioned					

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Appendix 1. Spectral diagram (RGB MODE)

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1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report. ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co., Ltd.

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 97-1, Hoeok-ri, Majang-myun, Ichion-city, Kyonggi-do, South Korea

1.3 Official Qualification(s)

KCC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product Name : LCD TV/MONITOR
 Model Number : NIKAO
 Serial Number : NONE
 Manufacturer : VIZEN TECHNOLOGY, INC
 Country of origin : KOREA
 Rating : 120 Va.c. , 60 Hz
 Receipt Date : 6-Nov-09
 X-tal list(s) : 12 MHz, 49.38 MHz

2.2 General descriptions of EUT

Items	Specification
Broadcast signal system	Color system:NTSC,ATSC,QAM-256,8-VSB Sound system:Stereo, MTS
Antenna input impedance	75 Ω
Power supply	AC 100V , 60 Hz
Sound output power	8 Ω 2 x 9 W
Resolution	1366 x 768
Brightness	500 cd/m ²
Contrast	2000 : 1(Typical)
Terminal	HDMI x 2 , S-Video x 1(NTSC), VGA x 1, Component x 2 , AV x 1(NTSC), Antenna X 1 , VGA sound in x 1 , SPDIF x 1
OSD language	English / French / Spanish
Operating temperature	+ 32 °F to 104 °F(0 °C to 40 °C)

3. Test Standards

Test Standard : FCC PART 15 (2008)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2003)

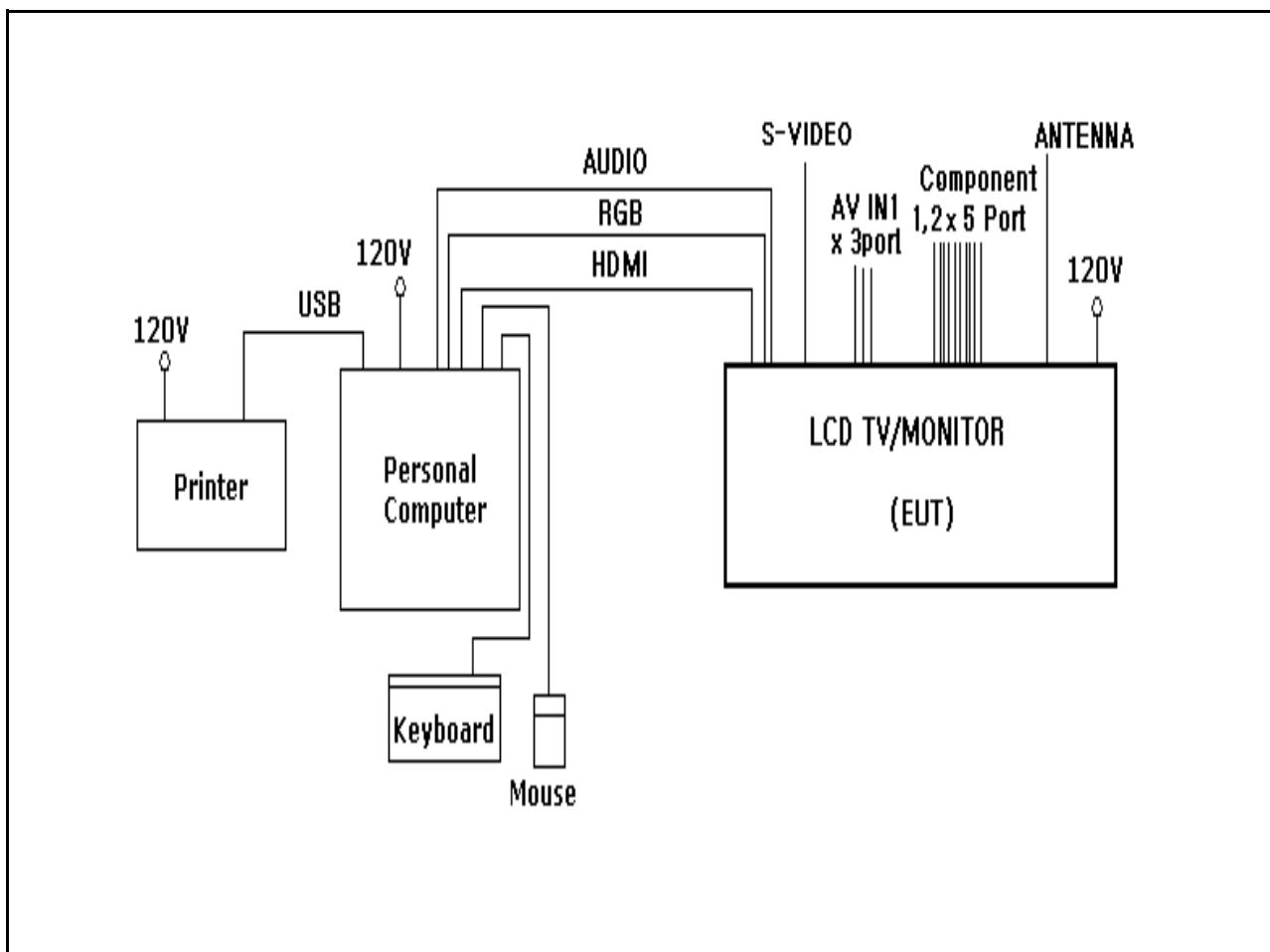
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.

4. Measurement Condition

4.1 EUT Operation.

- * The EUT was in the following operation mode during all testing
- * The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- * After setting as test arrangement diagram, we tested the EUT under continuous displaying "H" character and playing Audio out /Video

4.2 Configuration and Peripherals



	ESTECH Co., Ltd. Rm 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	  	Electromagnetic Interference Test Report
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4.3 EUT and Support equipment

Equipment Name	Model	S/N	Manufacturer	Remark (FCC ID)
LCD TV/MONITOR	NIKAO	NONE	VIZEN TECHNOLOGY, INC.	EUT
Personal Computer	DCMF	6RKPHBX	Dell Inc.	
Keyboard	RT7D00	09N-1415	Dell Asia Pacific Sdn.	
Mouse	MO56UOA	G0304M8R	Dell Asia Pacific Sdn.	
Printer	K10299	NONE	CANON VIETNAM CO.,LTD	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
LCD TV/MONITOR	RGB	Personal Computer	RGB	2	Y	
LCD TV/MONITOR	HDMI	Personal Computer	HDMI	2	Y	
LCD TV/MONITOR	AUDIO-IN	Personal Computer	AUDIO-OUT	2	N	
Component1,2*5port	-	-	-	2	N	
AV IN*3port	-	-	-	2	N	
S-VIDEO	-	-	-	2	N	
Personal computer	USB	Keyboard	USB	2	Y	
Personal computer	USB	Mouse	USB	2	Y	
Personal computer	USB	Printer	USB	2	Y	

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2008) . The test setup was made according to ANSI C 63.4 (2003) on an open test site, which allows a 3 m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	2011. 2. 01
Spectrum Analyzer	R3273	ADVANTEST	110600592	2011. 2. 01
LogBicon Antenna	VULB 9160	Schwarzbeck	3142	2011. 5. 19
Amplifier	8447F	HP	2805A02972	2011. 2. 01
Turn Table	2087	EMCO	2129	—
Antenna Mast	2070-01	EMCO	9702-203	—
ANT Mast Controller	2090	EMCO	1535	—
Turn Table Controller	2090	EMCO	1535	—

5.2 Environmental Condition

Test Place : Open site(3 m)

RGB mode

Temperature (°C) : 25 °C

Humidity (%) : 49 % R.H.

HDMI mode

Temperature (°C) : 26 °C

Humidity (%) : 51 % R.H.

5.3 Test data(RGB Mode)

Test Date : 8-Jun-10

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
31.94	23.50	V	1.0	10.51	0.9	40.0	34.91	-5.09
130.04	23.10	V	1.0	11.65	1.8	43.5	36.54	-6.96
140.58	18.60	V	1.0	12.41	2.0	43.5	33.01	-10.49
159.98	25.00	V	1.0	12.95	2.0	43.5	39.99	-3.51
169.68	20.60	H	1.5	12.19	2.2	43.5	35.00	-8.50
200.70	19.80	H	1.2	9.69	2.3	43.5	31.82	-11.68
245.20	28.50	H	1.2	11.43	2.7	46.0	42.67	-3.33
480.02	16.10	V	1.0	17.41	4.6	46.0	38.10	-7.90
560.01	17.50	H	1.0	19.21	5.2	46.0	41.94	-4.06
640.04	16.00	H	1.0	20.59	6.0	46.0	42.59	-3.41
700.02	14.20	H	1.0	21.24	6.3	46.0	41.75	-4.25
760.21	13.00	H	1.0	22.19	6.8	46.0	41.98	-4.02

Remark	H : Horizontal, V : Vertical TEST MODE : Resolution1 366*768(60Hz) at RGB mode (Worse Case) *CL = Cable Loss-Amplifier Gain(In case of above 1 000 Mhz) *CL = Cable Loss(In case of below 1 000 Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz. *After connect with ferrite cores to RGB cable, tested radiated emission.
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5.3 Test data(HDMI Mode)

Test Date : 8-Jun-10

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
32.00	22.80	V	1.0	10.51	0.9	40.0	34.21	-5.79
138.20	18.60	V	1.0	12.26	2.0	43.5	32.82	-10.68
140.58	19.50	V	1.0	12.41	2.0	43.5	33.91	-9.59
161.00	24.50	V	1.0	12.87	2.1	43.5	39.43	-4.07
181.50	19.80	H	1.3	11.25	2.2	43.5	33.25	-10.25
200.70	19.80	H	1.2	9.69	2.3	43.5	31.82	-11.68
245.50	28.00	H	1.2	11.43	2.7	46.0	42.17	-3.83
480.02	16.10	V	1.0	17.41	4.6	46.0	38.10	-7.90
560.01	17.50	H	1.0	19.21	5.2	46.0	41.94	-4.06
640.04	15.20	H	1.0	20.59	6.0	46.0	41.79	-4.21
700.02	14.20	H	1.0	21.24	6.3	46.0	41.75	-4.25
760.21	12.50	H	1.0	22.19	6.8	46.0	41.48	-4.52

Remark	H : Horizontal, V : Vertical TEST MODE : Resolution1 366*768(60Hz) at HDMI mode (Worse Case) *CL = Cable Loss-Amplifier Gain(In case of above 1 000 Mhz) *CL = Cable Loss(In case of below 1 000 Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz. *After connect with ferrite cores to RGB cable, tested radiated emission.
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6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC Part 15 (2008). The test setup was made according to ANSI C 63.4 (2003) in a shielded. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m. The test receiver with Quasi Peak detector complies with CISPR 16.

6.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	NNLA8120A	Schwarzbeck	8120161	2011. 2. 01
LISN	ESH3-Z5	Schwarzbeck	838979/010	2011. 2. 01
TEST Receive	ESPI7	Rohde & Schwarz	100185	2010. 8. 25
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2011. 2. 01

6.2 Environmental Condition

Test Place : Shielded Room

RGB MODE

Temperature (°C) : 23 °C

Humidity (%) : 48 % R.H.

HDMI MODE

Temperature (°C) : 23 °C

Humidity (%) : 48 % R.H.

6.3 Test data (RGB MODE)

Test Date : 7-Jun-10

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.10	0.4	H	65.36	47.72	48.20	55.36	25.35	25.83
0.19	0.10	0.4	H	63.95	49.33	49.82	53.95	38.65	39.14
0.22	0.10	0.4	N	62.74	49.94	50.43	52.74	35.21	35.70
0.23	0.11	0.4	N	62.34	50.66	51.16	52.34	35.28	35.78
0.24	0.11	0.4	H	62.20	51.25	51.75	52.20	34.85	35.35
0.27	0.11	0.4	H	61.24	47.82	48.32	51.24	27.70	28.20
0.56	0.12	0.4	H	56.00	45.75	46.32	46.00	30.96	31.53
0.59	0.12	0.5	H	56.00	45.40	45.97	46.00	32.33	32.90
0.72	0.12	0.5	H	56.00	44.83	45.42	46.00	28.29	28.88
0.82	0.12	0.5	H	56.00	45.11	45.71	46.00	30.98	31.58
0.94	0.12	0.5	H	56.00	44.74	45.35	46.00	33.45	34.06
0.97	0.12	0.5	H	56.00	44.77	45.38	46.00	28.92	29.53
10.60	0.41	1.0	H	60.00	33.68	35.08	50.00	28.25	29.65
11.25	0.43	1.0	N	60.00	33.98	35.43	50.00	26.58	28.03
20.10	0.73	1.3	N	60.00	33.55	35.54	50.00	26.79	28.78
25.98	0.81	1.4	N	60.00	34.16	36.37	50.00	28.69	30.90
28.50	0.85	1.4	N	60.00	39.50	41.80	50.00	34.38	36.68
28.74	0.86	1.4	H	60.00	35.50	37.80	50.00	32.93	35.23
Remark	H : Hot Line, N : Neutral Line								

6.3 Test data (HDMI MODE)

Test Date : 7-Jun-10

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.10	0.4	N	65.41	47.86	48.34	55.41	25.81	26.29
0.20	0.10	0.4	H	63.82	49.31	49.80	53.82	38.55	39.04
0.22	0.10	0.4	H	62.74	50.64	51.13	52.74	35.96	36.45
0.23	0.11	0.4	H	62.49	51.08	51.58	52.49	35.07	35.57
0.26	0.11	0.4	H	61.53	47.31	47.81	51.53	30.50	31.00
0.32	0.11	0.4	H	59.66	47.87	48.39	49.66	35.22	35.74
0.56	0.12	0.4	H	56.00	45.83	46.40	46.00	31.72	32.29
0.59	0.12	0.5	H	56.00	45.48	46.05	46.00	32.23	32.80
0.70	0.12	0.5	N	56.00	43.85	44.44	46.00	28.48	29.07
0.71	0.12	0.5	H	56.00	46.05	46.64	46.00	30.90	31.49
0.82	0.12	0.5	H	56.00	45.28	45.88	46.00	31.18	31.78
0.84	0.12	0.5	H	56.00	44.86	45.46	46.00	34.24	34.84
8.13	0.38	0.9	N	60.00	33.62	34.89	50.00	28.25	29.52
8.73	0.38	0.9	H	60.00	33.99	35.29	50.00	29.06	30.36
11.04	0.43	1.0	N	60.00	35.00	36.43	50.00	27.97	29.40
25.99	0.81	1.4	N	60.00	34.62	36.83	50.00	27.95	30.16
26.48	0.82	1.4	N	60.00	34.48	36.70	50.00	27.46	29.68
28.57	0.85	1.4	H	60.00	35.33	37.63	50.00	27.19	29.49
Remark	H : Hot Line, N : Neutral Line								

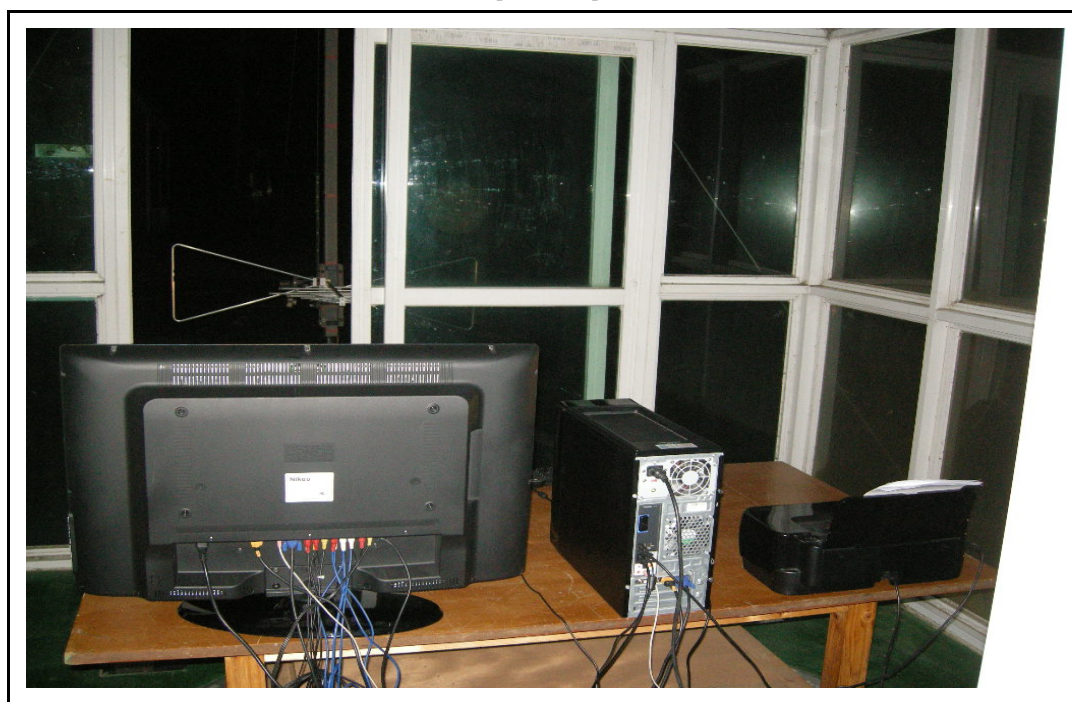
7. Photographs of test setup

7.1 Setup for Radiated Test : 30 MHz ~ 1 000 MHz

[Front]



[Rear]



7.2 Setup for Conducted Test : 0.15 MHz ~ 30 MHz

[Front]



[Rear]



8. Photographs of EUT

[Front]



[Rear]



Appendix 1. Spectral diagram

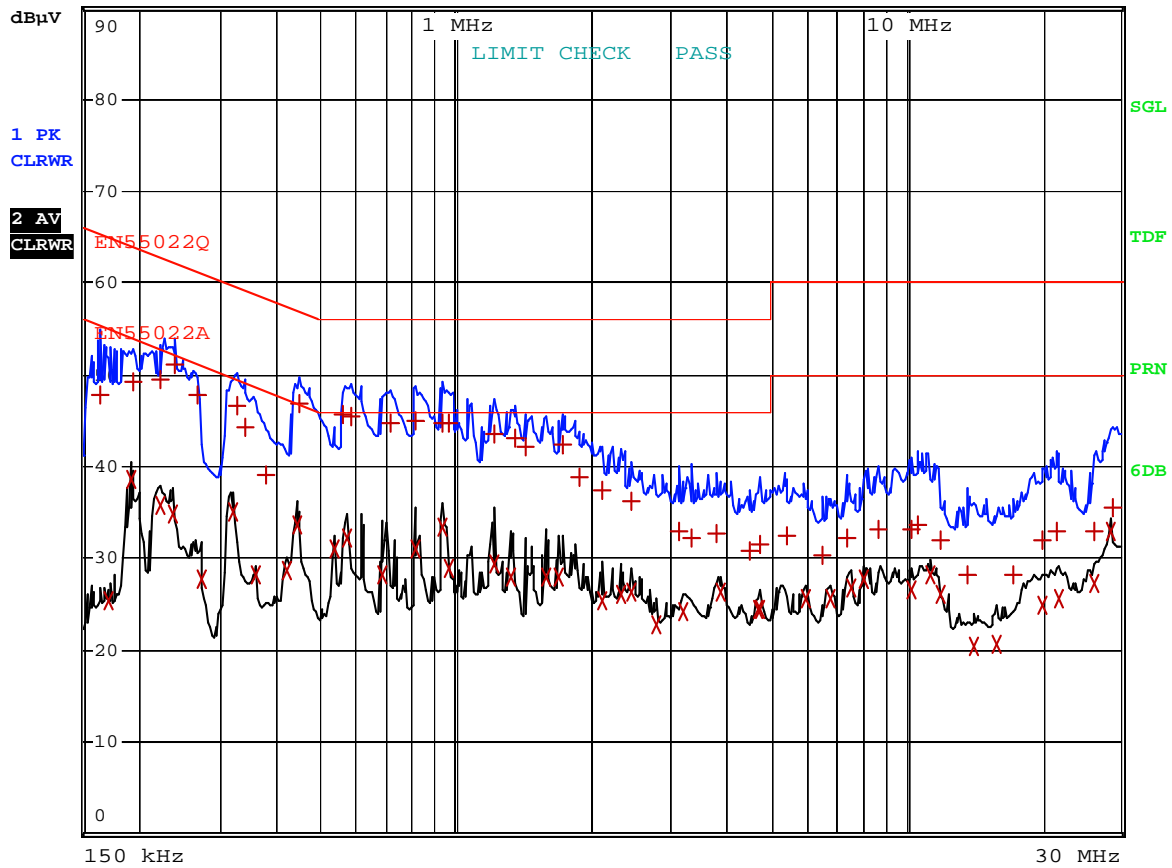
*HOT (RGB MODE)



RBW 9 kHz

MT 1 s

Att 10 dB AUTO PREAMP OFF



Comment: NIKAO RGB HOT

Date: 7.JUN.2010 15:15:17

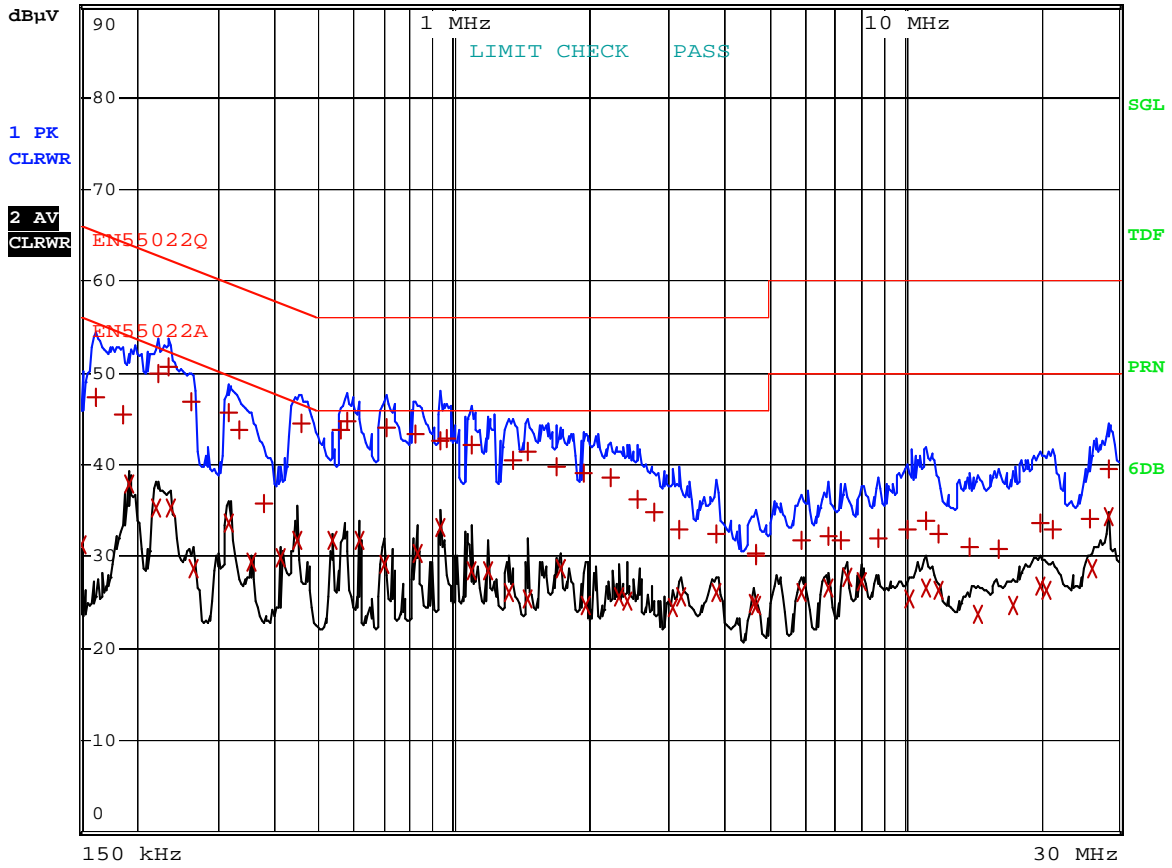
*NEUTRAL (RGB MODE)



RBW 9 kHz

MT 1 s

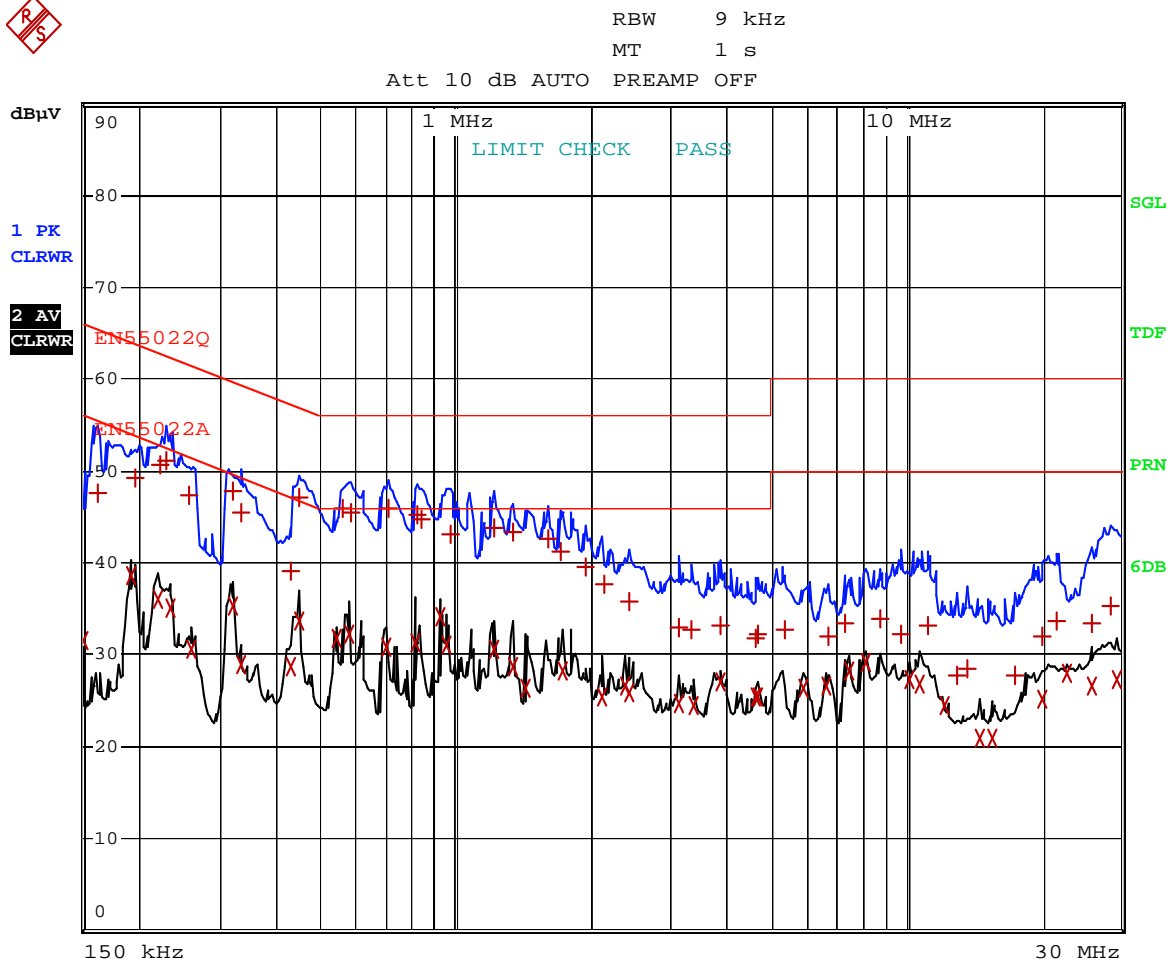
Att 10 dB AUTO PREAMP OFF



Comment: NIKAO RGB NEUTRAL
Date: 7.JUN.2010 15:19:53

Appendix 2. Spectral diagram

*HOT (HDMI MODE)



Comment: NIKAO HDMI HOT
Date: 7.JUN.2010 15:34:27

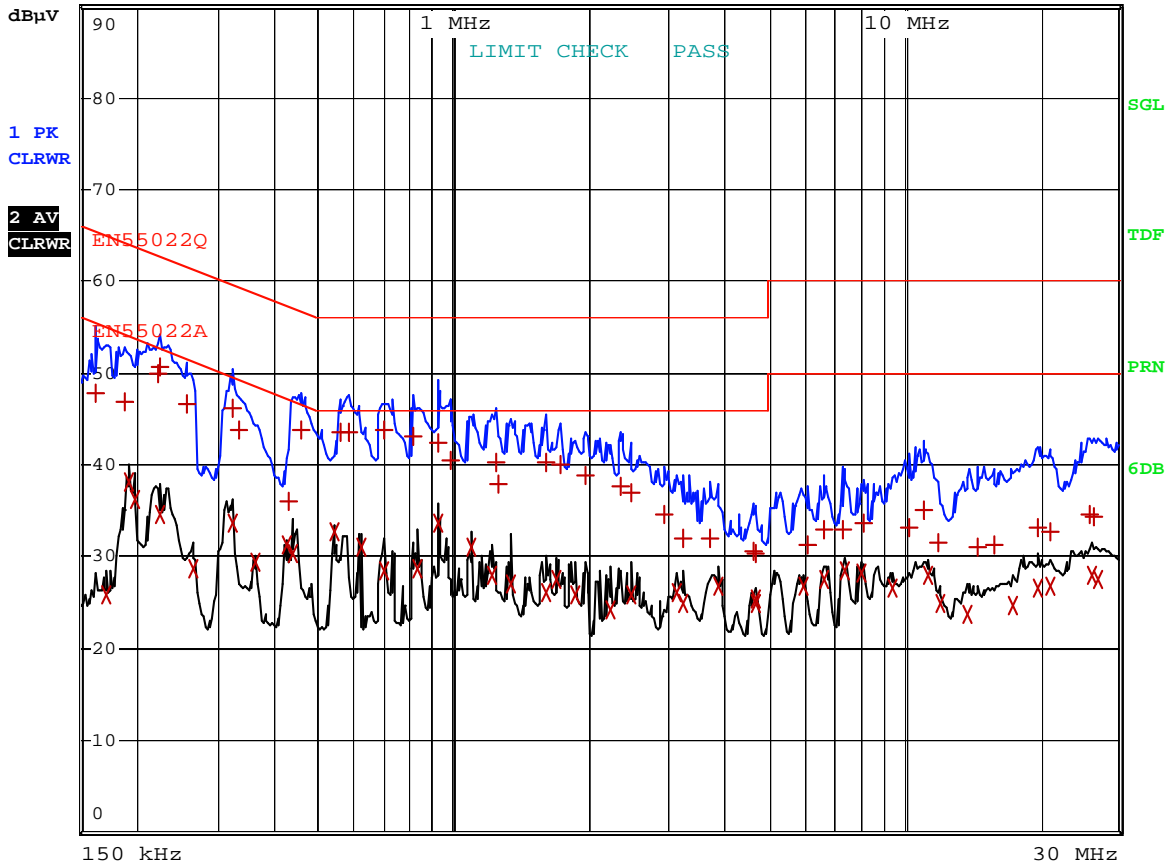
*NEUTRAL (HDMI MODE)



RBW 9 kHz

MT 1 s

Att 10 dB AUTO PREAMP OFF



Comment: NIKAO HDMI NEUTRAL
Date: 7.JUN.2010 15:29:48