FCC Part 15B
Measurement and Test Report

For

NexusTech Ltd

Rm 23 8/F Mei Hong Building, 160 Wai Yip Street, Kwan Tong, Kowloon,

Hong Kong

FCC ID: 2AB2A-EYE2TV

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	IPTV
Tested Model:	EYE2TV
Report No.:	STR14038187I-3
Tested Date:	2014-03-10 to 2014-03-21
Issued Date:	2014-03-21
Tested By:	Seven Song / Engineer
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Prepared By:

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	NexusTech Ltd
Address of applicant:	Rm 23 8/F Mei Hong Building, 160 Wai Yip Street, Kwan Tong, Kowloon, Hong Kong
Manufacturer:	SHENZHEN GAEA ELECTRONICS CO., LTD
Address of manufacturer:	2-3, Datian Xiaoqu, Tongfuyu Industrial Zone, Buyong, Shajing Street, Bao'an District, Shenzhen, Guangdong Province, China

General Description of EUT	
Product Name:	IPTV
Trade Name:	/
Model No.:	EYE2TV
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	AC100-240V, Adapter DC 12V
Rated Current:	1A
Power Adapter Model:	ZWCX312C-1210, HWT-15W-120100BU
Lowest Internal Frequency:	32.768kHz
Highest Internal Frequency:	1.6GHz
Classification of ITE:	B

1.2 Test Standards

The following report is prepared on behalf of the NexusTech Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Playing	HDMI Output(Adapter: ZWCX312C-1210)
TM2	Downloading	Connect to PC(Adapter: ZWCX312C-1210)
TM3	Playing	HDMI Output (Adapter: HWT-15W-120100BU)
TM4	Downloading	Connect to PC(Adapter: HWT-15W-120100BU)

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Power Cable (ZWC)	1.5	Unshielded	With Ferrite
DC Power Cable (HWT)	2.5	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
USB Cable	1.0	Shielded	With Ferrite
HDMI Cable	1.2	Shielded	Without Ferrite

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Notebook	Lenovo	20007	EB12648265

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

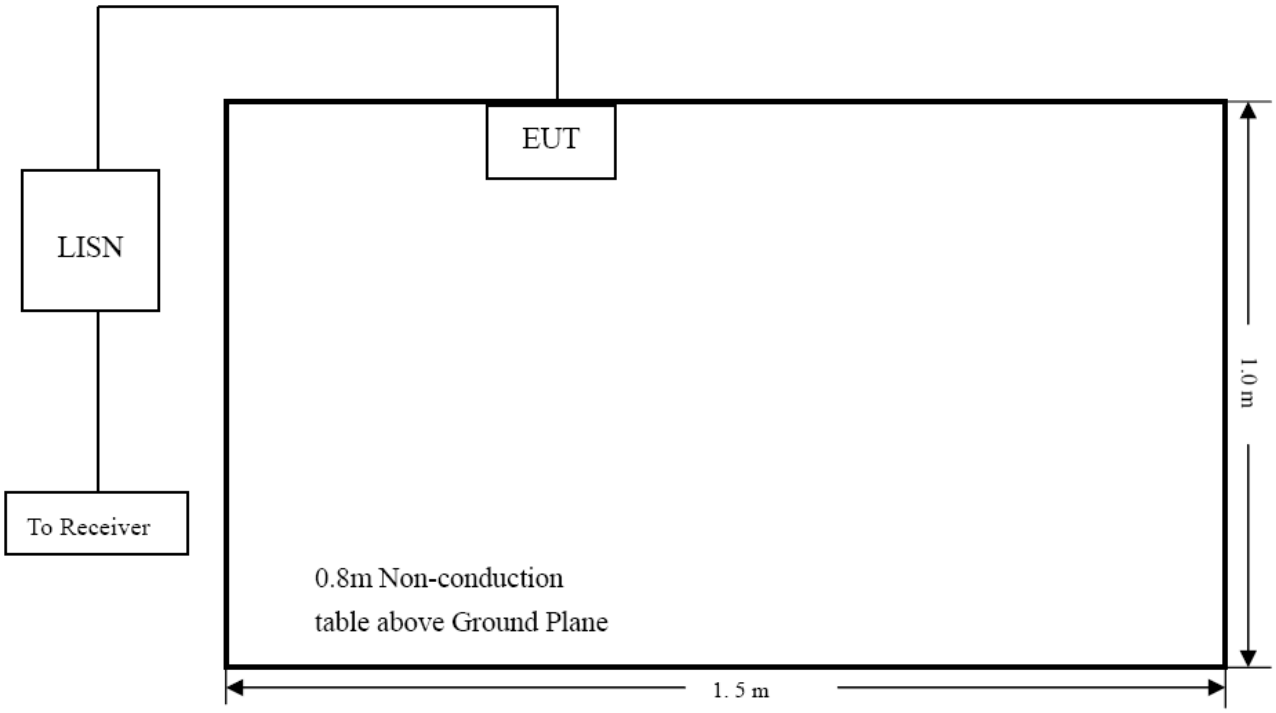
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2013-05-07	2014-05-06
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2013-05-07	2014-05-06
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2013-05-07	2014-05-06

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

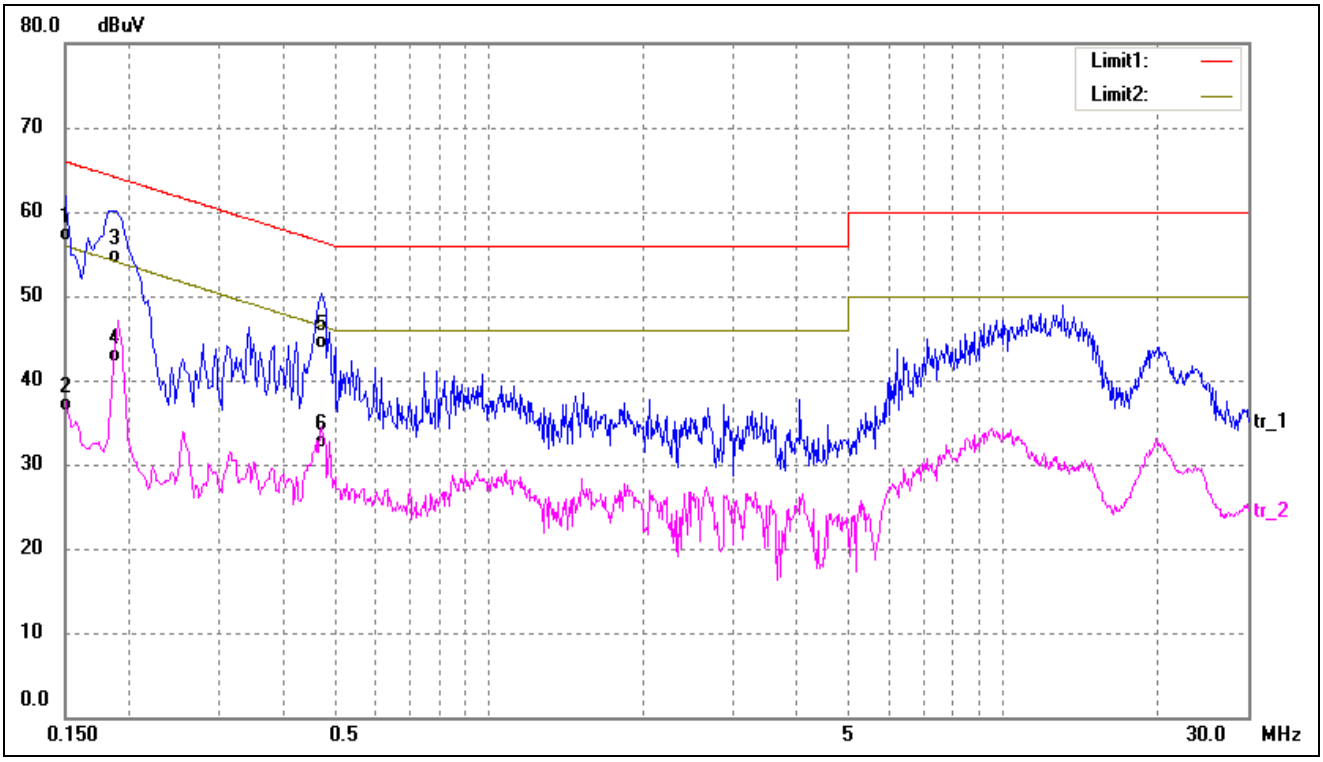
-7.13 dB at **0.1900 MHz** in the **Line**, **Average** detector TM1 Mode, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

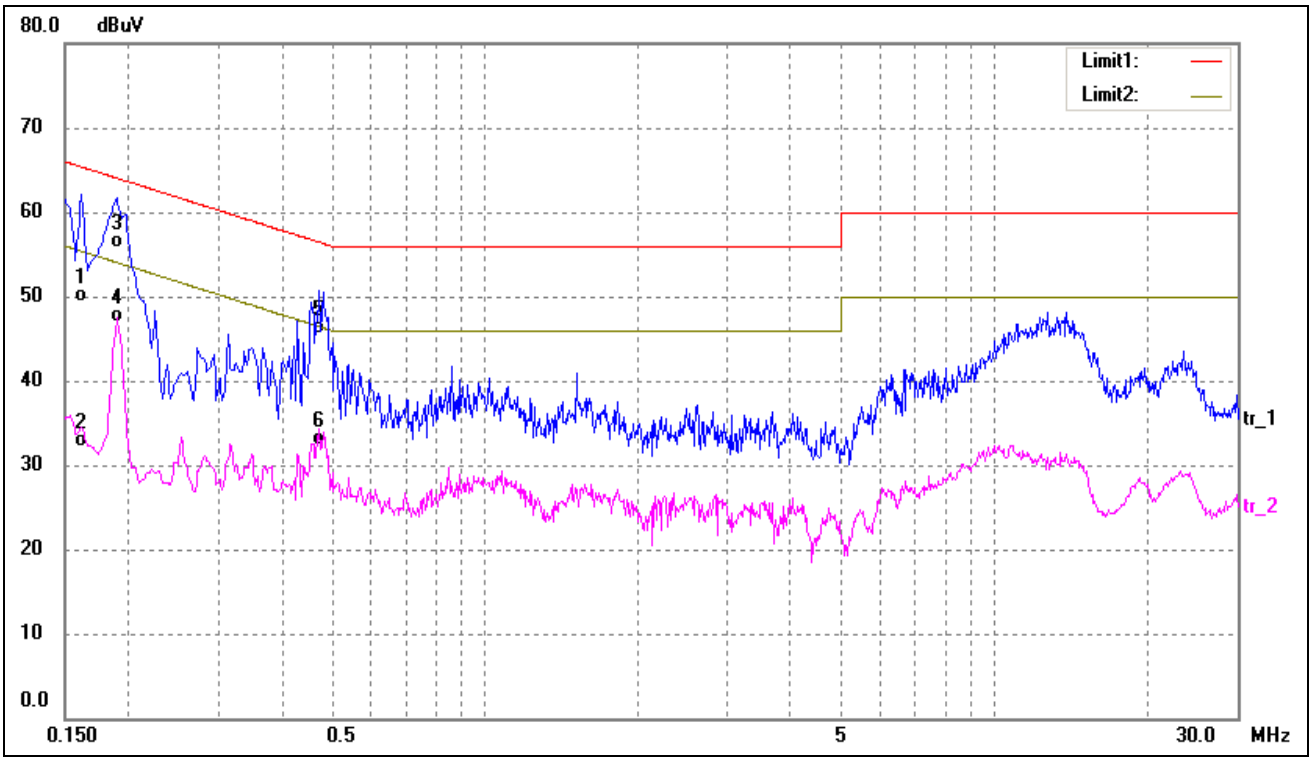
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1500	46.94	9.50	56.44	65.99	-9.55	QP
2	0.1500	26.71	9.50	36.21	55.99	-19.78	AVG
3	0.1860	44.40	9.50	53.90	64.21	-10.31	QP
4	0.1860	32.68	9.50	42.18	54.21	-12.03	AVG
5	0.4740	34.24	9.50	43.74	56.44	-12.70	QP
6	0.4740	22.38	9.50	31.88	46.44	-14.56	AVG

Test Specification: *Line*

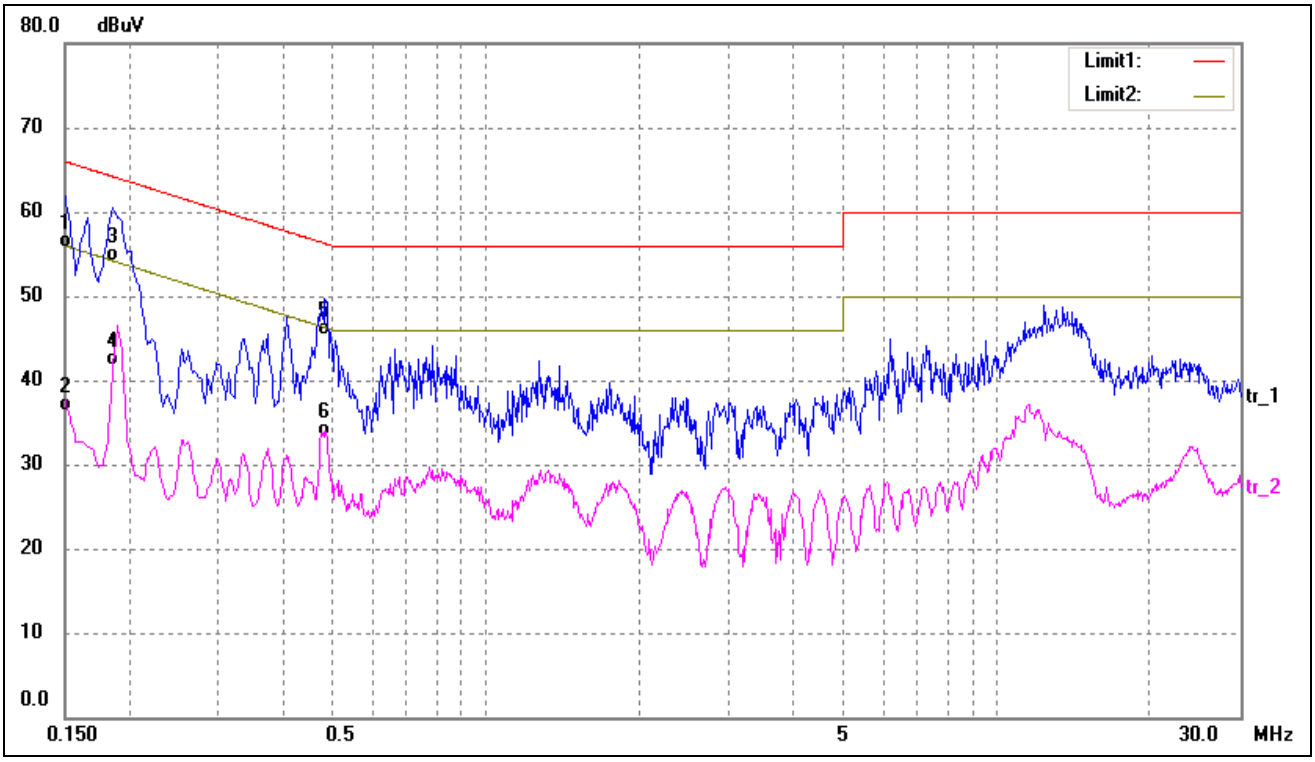


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1620	39.71	9.50	49.21	65.36	-16.15	QP
2	0.1620	22.56	9.50	32.06	55.36	-23.30	AVG
3	0.1900	46.15	9.50	55.65	64.04	-8.39	QP
4*	0.1900	37.41	9.50	46.91	54.04	-7.13	AVG
5	0.4740	36.08	9.50	45.58	56.44	-10.86	QP
6	0.4740	22.87	9.50	32.37	46.44	-14.07	AVG

Plot of Conducted Emissions Test Data

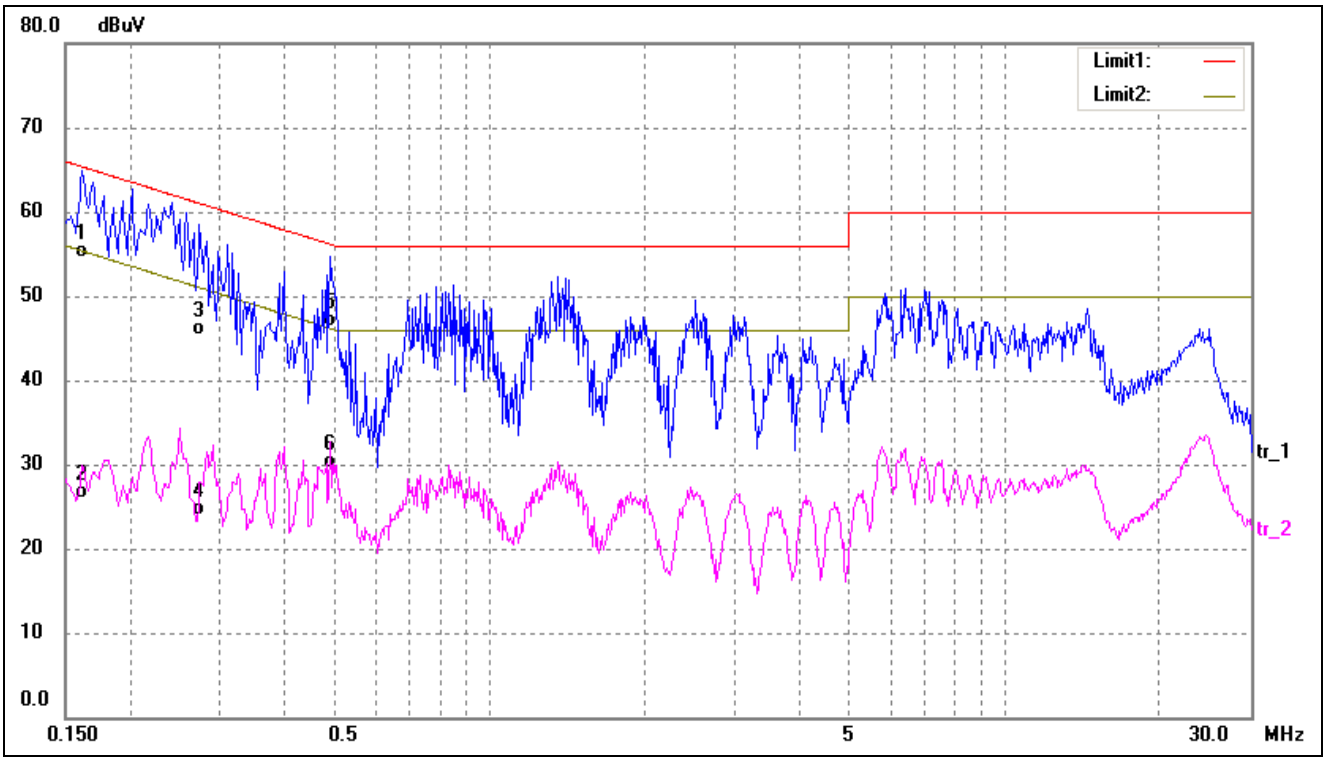
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM2*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1500	46.23	9.50	55.73	66.00	-10.27	QP
2	0.1500	26.84	9.50	36.34	56.00	-19.66	AVG
3*	0.1860	44.57	9.50	54.07	64.21	-10.14	QP
4	0.1860	32.11	9.50	41.61	54.21	-12.60	AVG
5	0.4860	35.84	9.50	45.34	56.24	-10.90	QP
6	0.4860	23.84	9.50	33.34	46.24	-12.90	AVG

Test Specification: *Line*

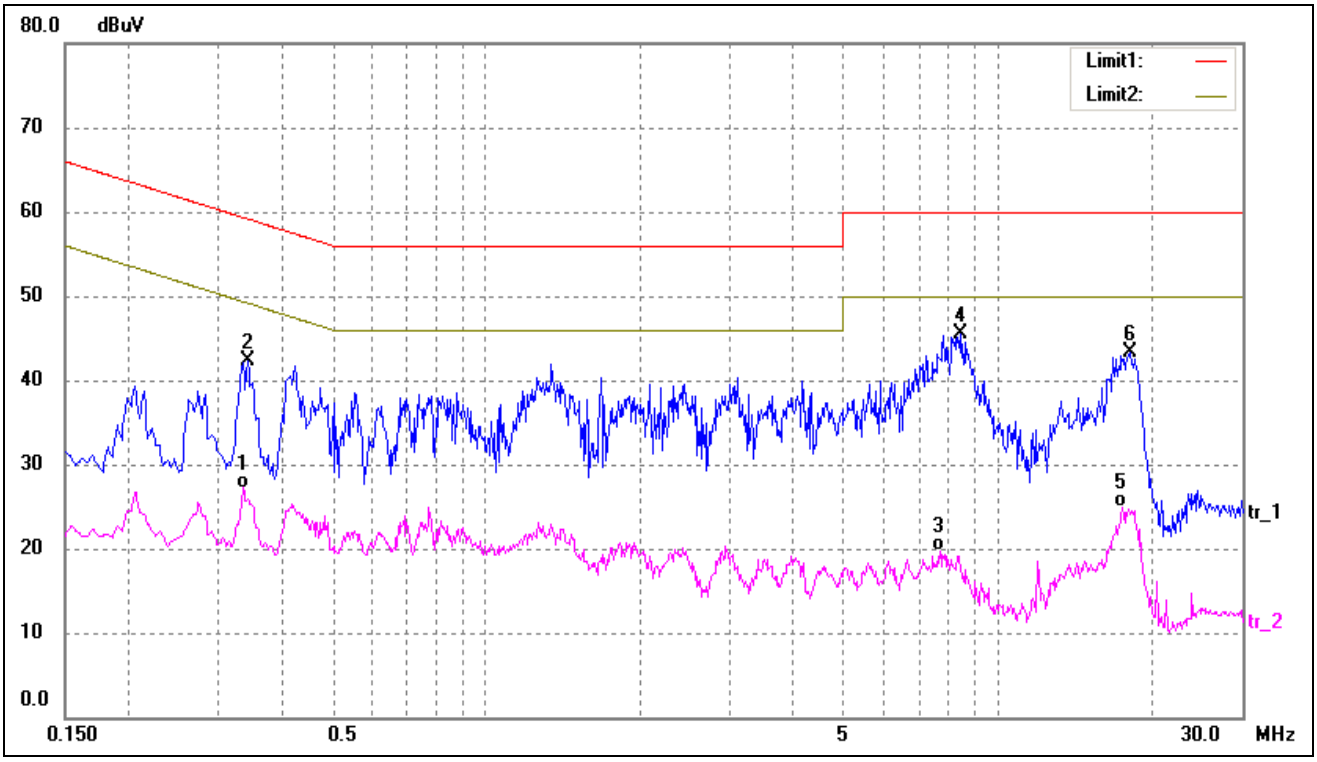


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1620	45.10	9.50	54.60	65.36	-10.76	QP
2	0.1620	16.44	9.50	25.94	55.36	-29.42	AVG
3	0.2740	35.85	9.50	45.35	61.00	-15.65	QP
4	0.2740	14.50	9.50	24.00	51.00	-27.00	AVG
5*	0.4900	36.90	9.50	46.40	56.17	-9.77	QP
6	0.4900	20.02	9.50	29.52	46.17	-16.65	AVG

Plot of Conducted Emissions Test Data

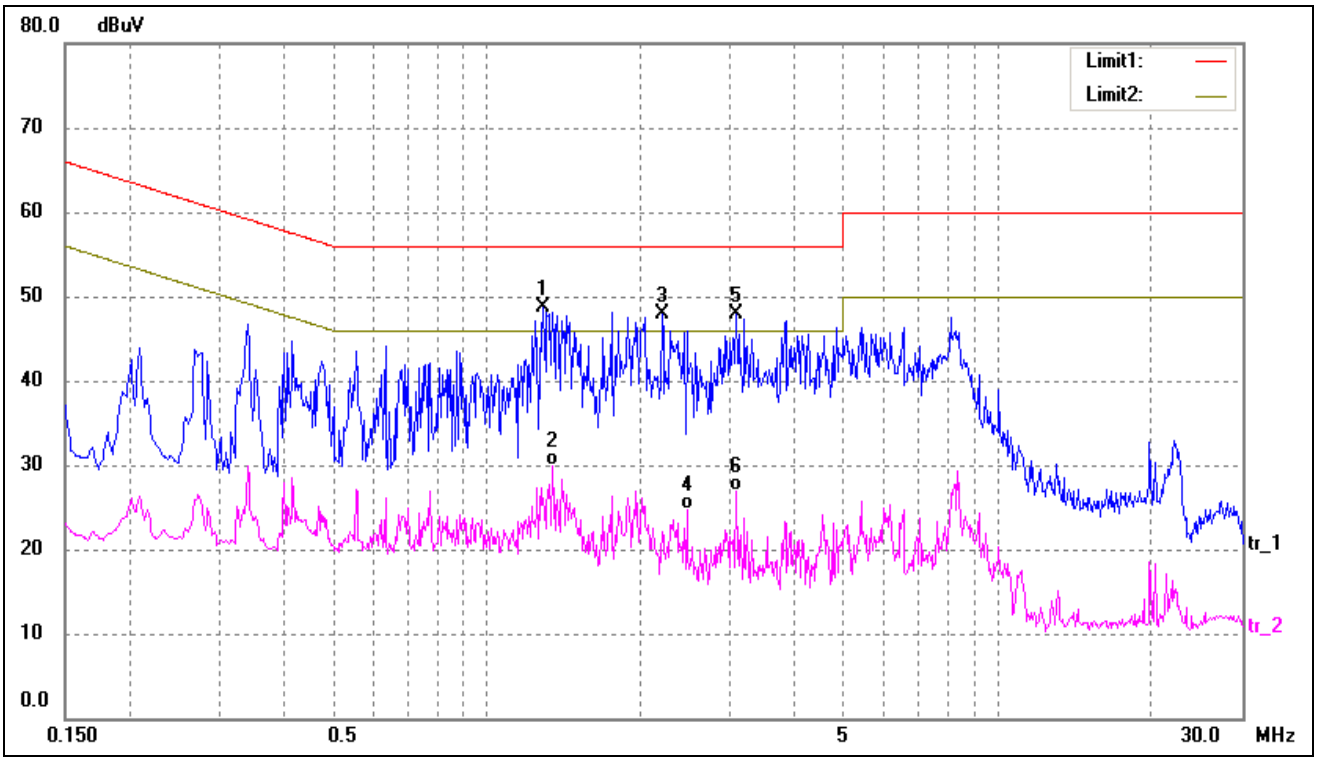
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM3*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.3340	27.20	0.00	27.20	49.35	-22.15	AVG
2	0.3420	42.29	0.00	42.29	59.15	-16.86	peak
3	7.7100	19.69	0.00	19.69	50.00	-30.31	AVG
4*	8.4780	45.43	0.00	45.43	60.00	-14.57	peak
5	17.5660	24.91	0.00	24.91	50.00	-25.09	AVG
6	18.1060	43.27	0.00	43.27	60.00	-16.73	peak

Test Specification: *Line*

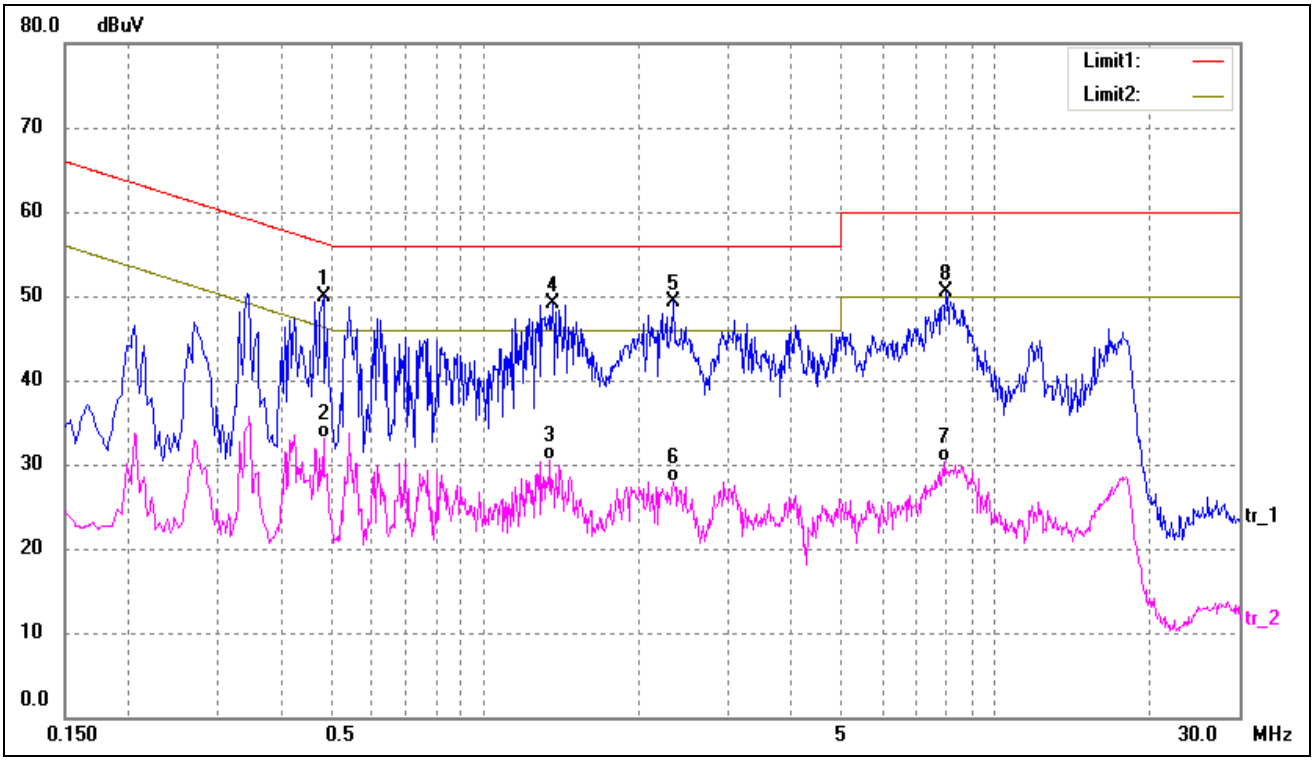


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	1.2940	48.80	0.00	48.80	56.00	-7.20	peak
2	1.3460	29.82	0.00	29.82	46.00	-16.18	AVG
3	2.2020	47.95	0.00	47.95	56.00	-8.05	peak
4	2.4620	24.64	0.00	24.64	46.00	-21.36	AVG
5	3.0740	47.91	0.00	47.91	56.00	-8.09	peak
6	3.0740	26.94	0.00	26.94	46.00	-19.06	AVG

Plot of Conducted Emissions Test Data

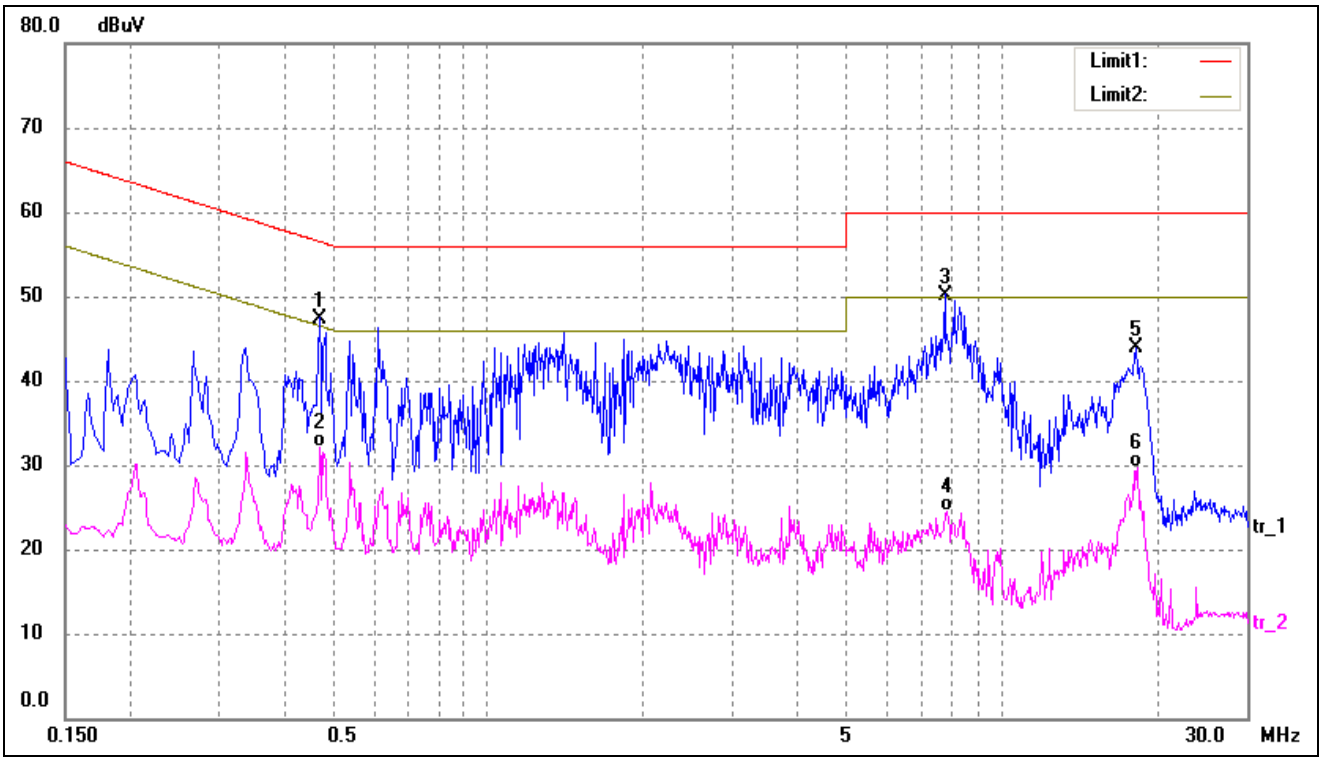
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM4*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.4820	50.00	0.00	50.00	56.30	-6.30	peak
2	0.4820	33.14	0.00	33.14	46.30	-13.16	AVG
3	1.3420	30.60	0.00	30.60	46.00	-15.40	AVG
4	1.3580	49.02	0.00	49.02	56.00	-6.98	peak
5	2.3420	49.40	0.00	49.40	56.00	-6.60	peak
6	2.3420	27.83	0.00	27.83	46.00	-18.17	AVG
7	7.9620	30.25	0.00	30.25	50.00	-19.75	AVG
8	7.9940	50.53	0.00	50.53	60.00	-9.47	peak

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.4700	47.40	0.00	47.40	56.51	-9.11	peak
2	0.4700	32.18	0.00	32.18	46.51	-14.33	AVG
3	7.7620	50.20	0.00	50.20	60.00	-9.80	peak
4	7.8260	24.55	0.00	24.55	50.00	-25.45	AVG
5	18.2660	43.84	0.00	43.84	60.00	-16.16	peak
6	18.3420	29.65	0.00	29.65	50.00	-20.35	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

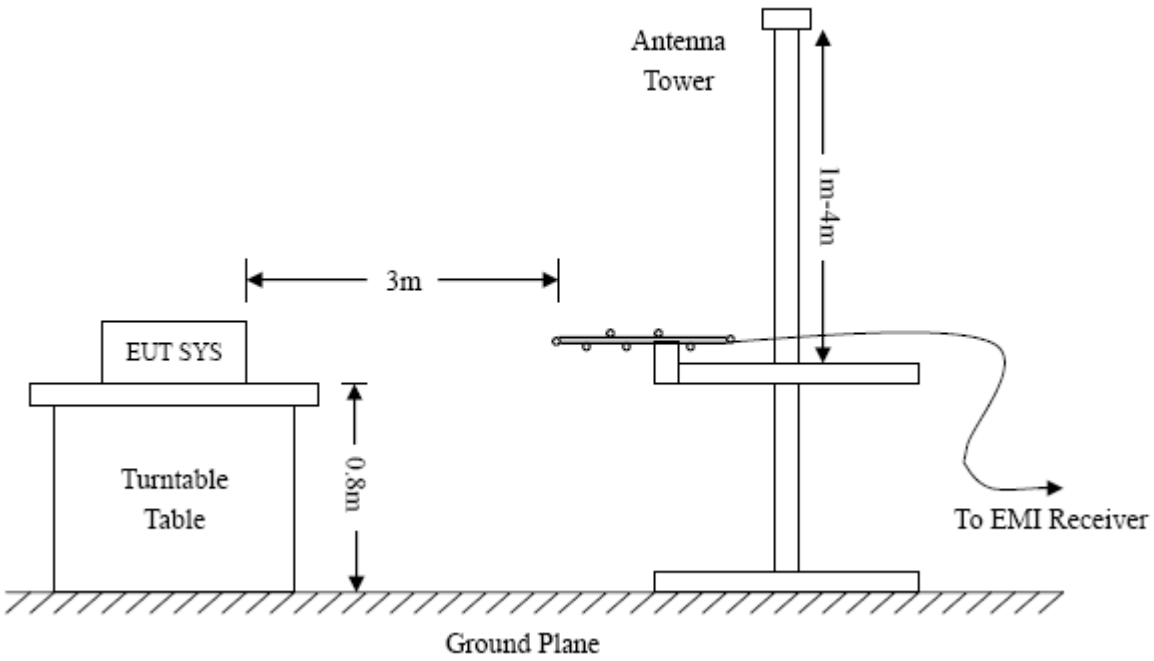
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2013-04-20	2014-04-19

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

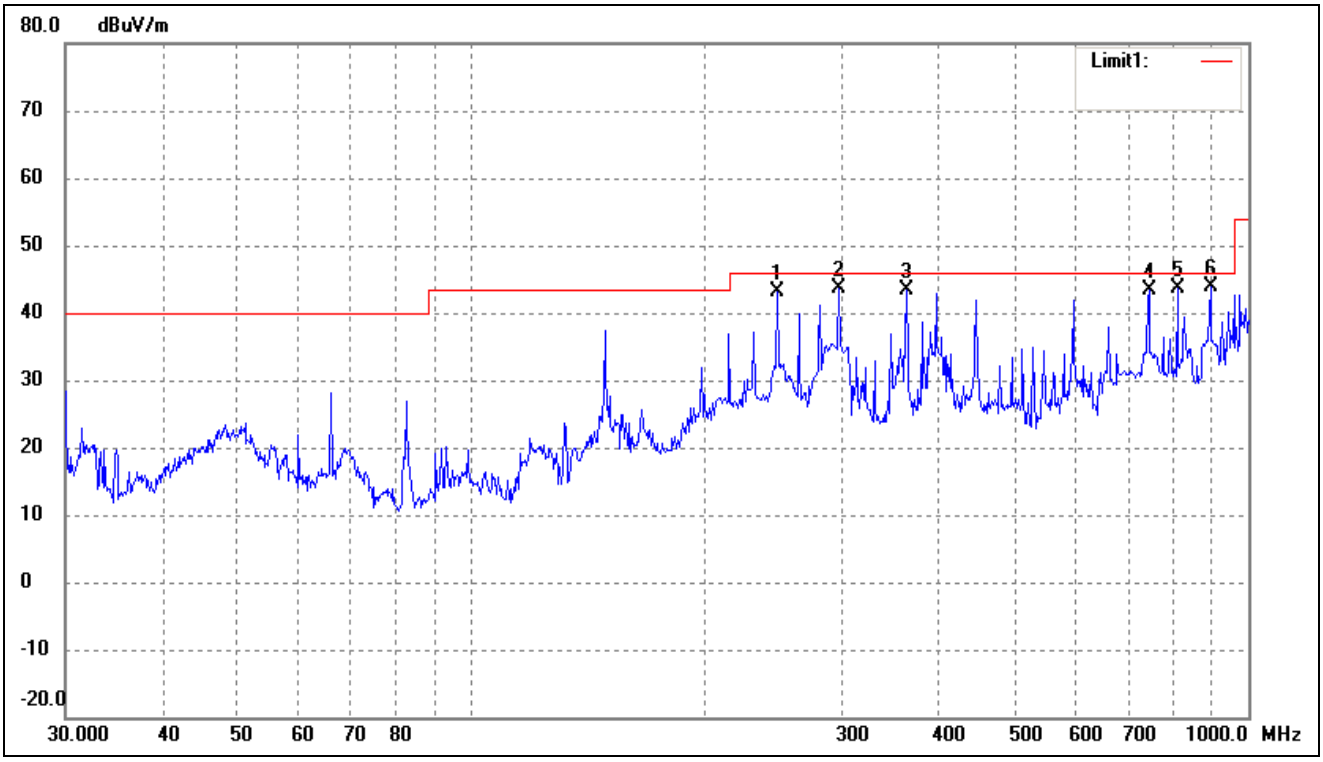
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.90 dB at **810.2653 MHz** in the **Vertical** polarization TM3, **9 kHz** to **8 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

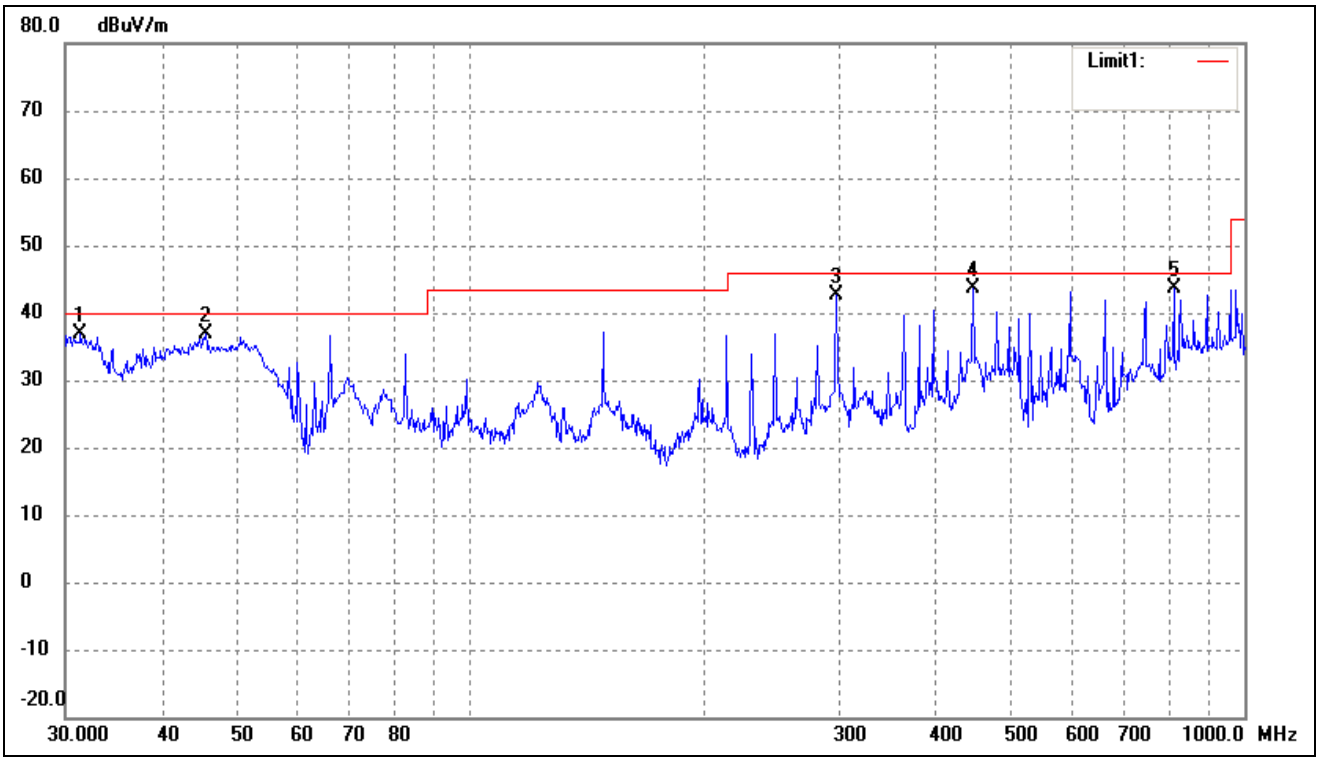
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	247.6819	50.61	-7.55	43.06	46.00	-2.94	58	100	peak
2	297.2241	49.99	-6.24	43.75	46.00	-2.25	326	100	peak
3	362.9845	47.42	-3.99	43.43	46.00	-2.57	29	100	peak
4	744.8659	42.59	0.83	43.42	46.00	-2.58	209	100	peak
5	810.2653	40.55	2.96	43.51	46.00	-2.49	330	200	peak
6*	893.8567	38.68	5.20	43.88	46.00	-2.12	360	100	peak

Test Specification: *Vertical*

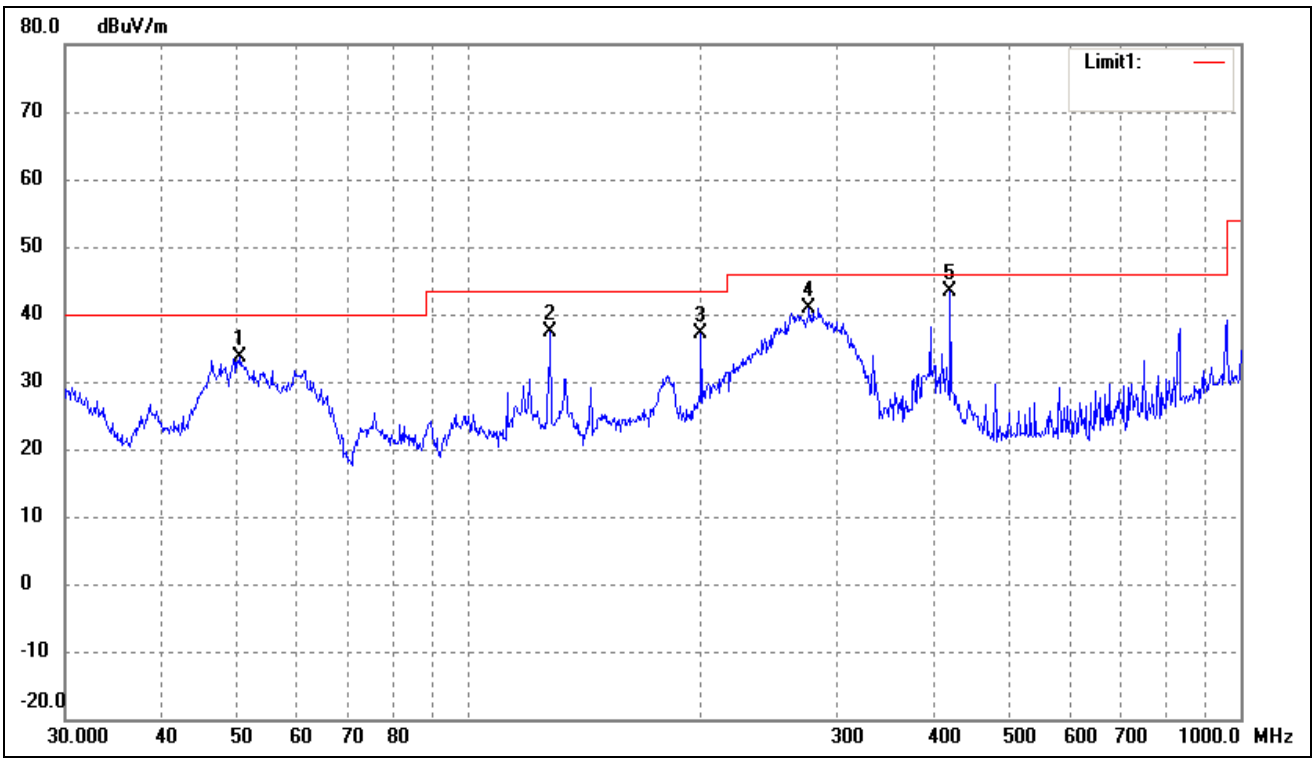


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	31.3992	47.55	-10.59	36.96	40.00	-3.04	51	100	peak
2	45.5347	44.36	-7.46	36.90	40.00	-3.10	308	100	peak
3	297.2241	48.93	-6.24	42.69	46.00	-3.31	120	100	peak
4	446.4141	45.75	-2.21	43.54	46.00	-2.46	359	100	peak
5*	810.2653	39.74	3.86	43.60	46.00	-2.40	272	100	peak

Plot of Radiated Emissions Test Data

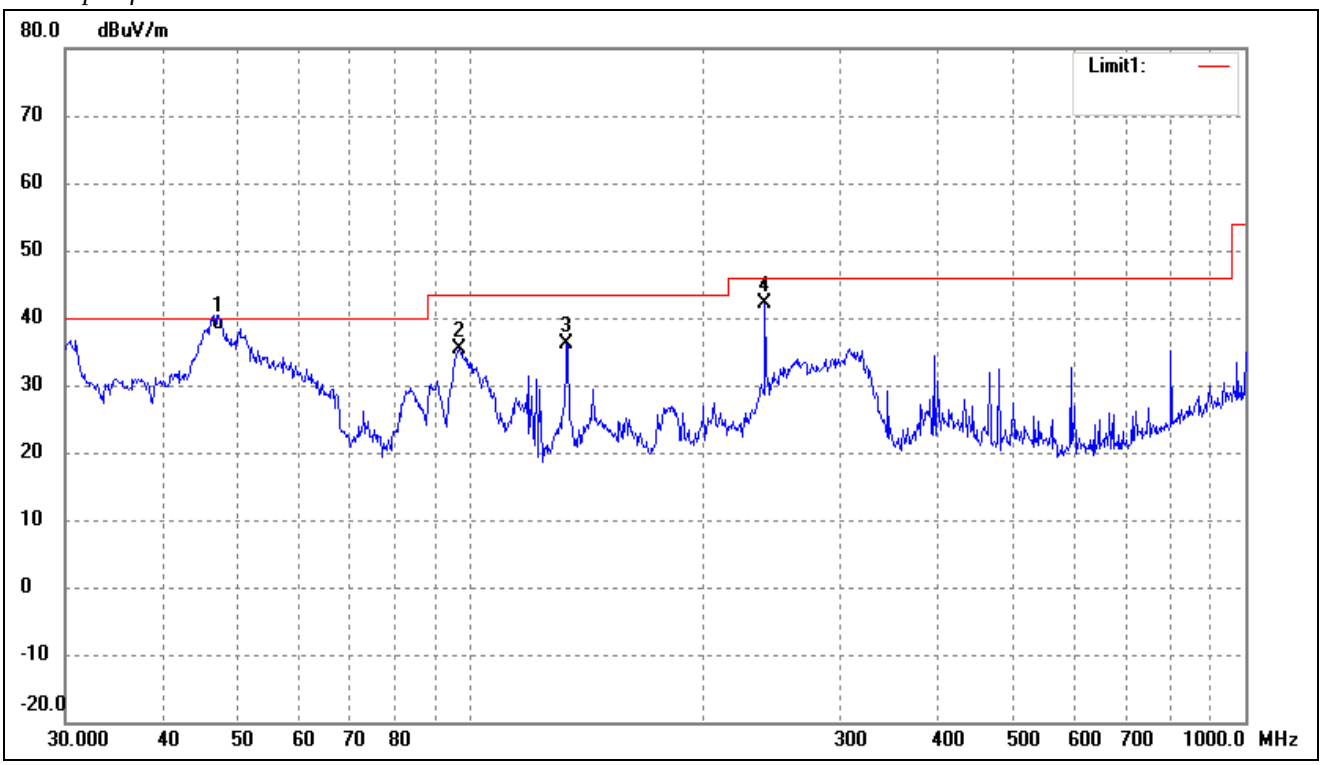
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM2*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	50.5859	41.10	-7.50	33.60	40.00	-6.40	224	100	peak
2	127.6645	49.68	-12.39	37.29	43.50	-6.21	136	100	peak
3	199.9856	46.27	-9.06	37.21	43.50	-6.29	360	100	peak
4	276.1236	47.65	-6.79	40.86	46.00	-5.14	272	100	peak
5*	420.5803	45.73	-2.46	43.27	46.00	-2.73	116	100	peak

Test Specification: *Vertical*

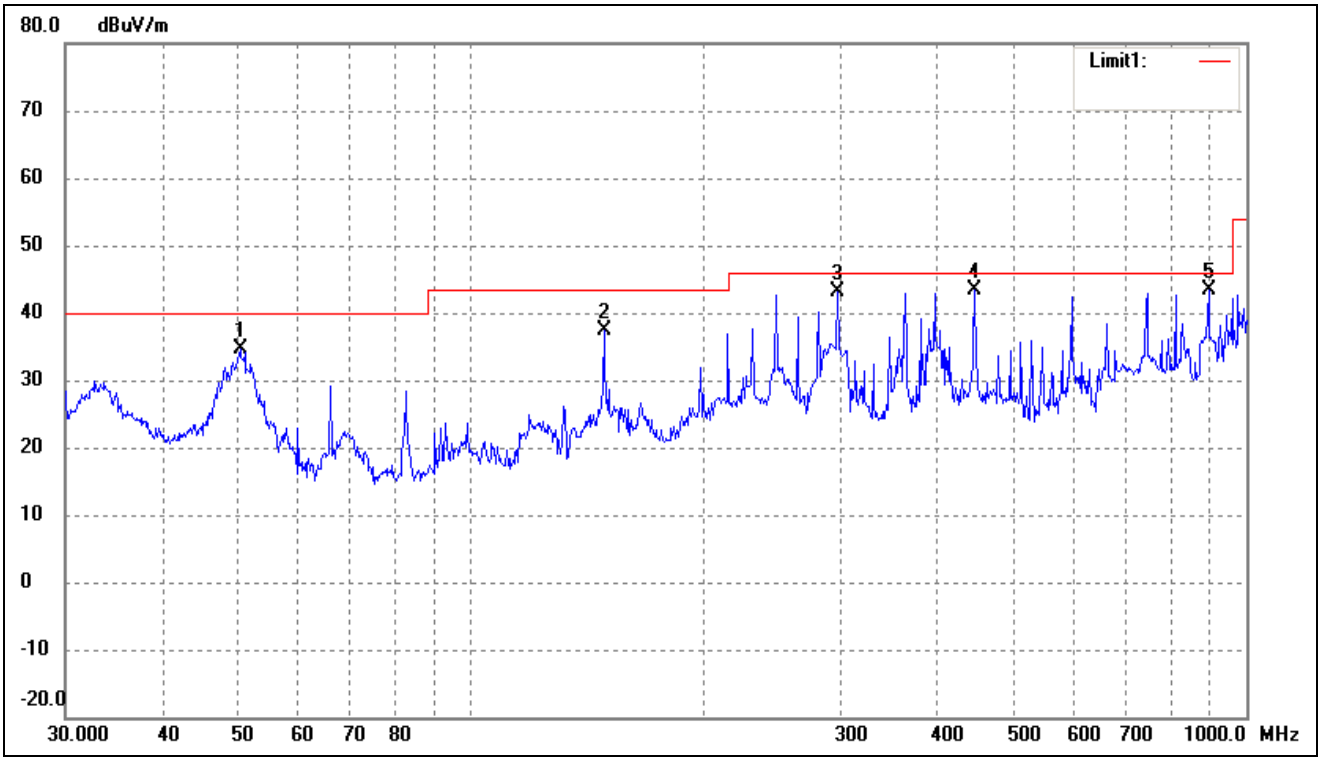


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1*	47.3255	45.52	-7.45	38.07	40.00	-1.93	360	100	QP
2	96.7749	45.22	-9.95	35.27	43.50	-8.23	157	100	peak
3	133.1511	49.04	-12.87	36.17	43.50	-7.33	274	100	peak
4	239.9874	49.88	-7.79	42.09	46.00	-3.91	283	100	peak

Plot of Radiated Emissions Test Data

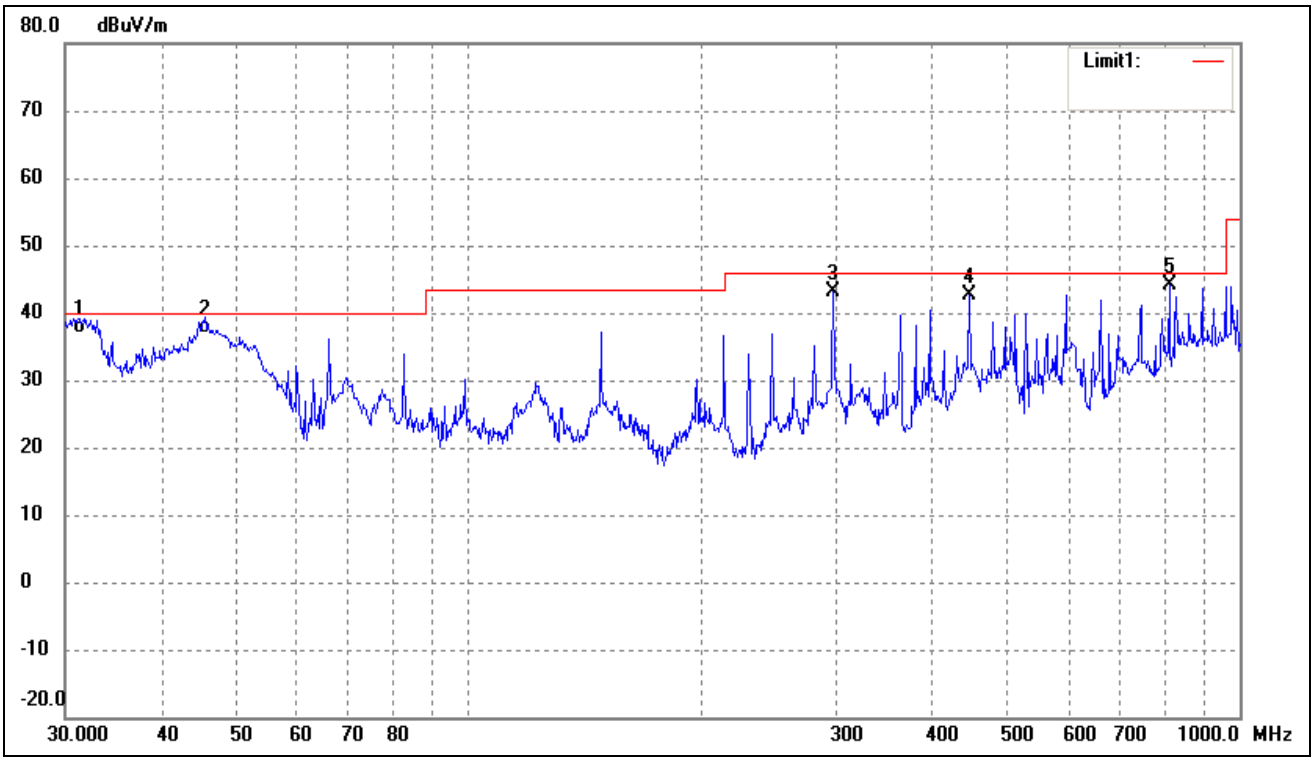
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM3*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	50.4089	42.21	-7.49	34.72	40.00	-5.28	214	200	peak
2	148.4410	50.33	-12.98	37.35	43.50	-6.15	272	100	peak
3	297.2241	49.49	-6.24	43.25	46.00	-2.75	360	100	peak
4*	446.4141	45.59	-2.21	43.38	46.00	-2.62	360	100	peak
5	893.8567	38.18	5.20	43.38	46.00	-2.62	182	200	peak

Test Specification: *Vertical*

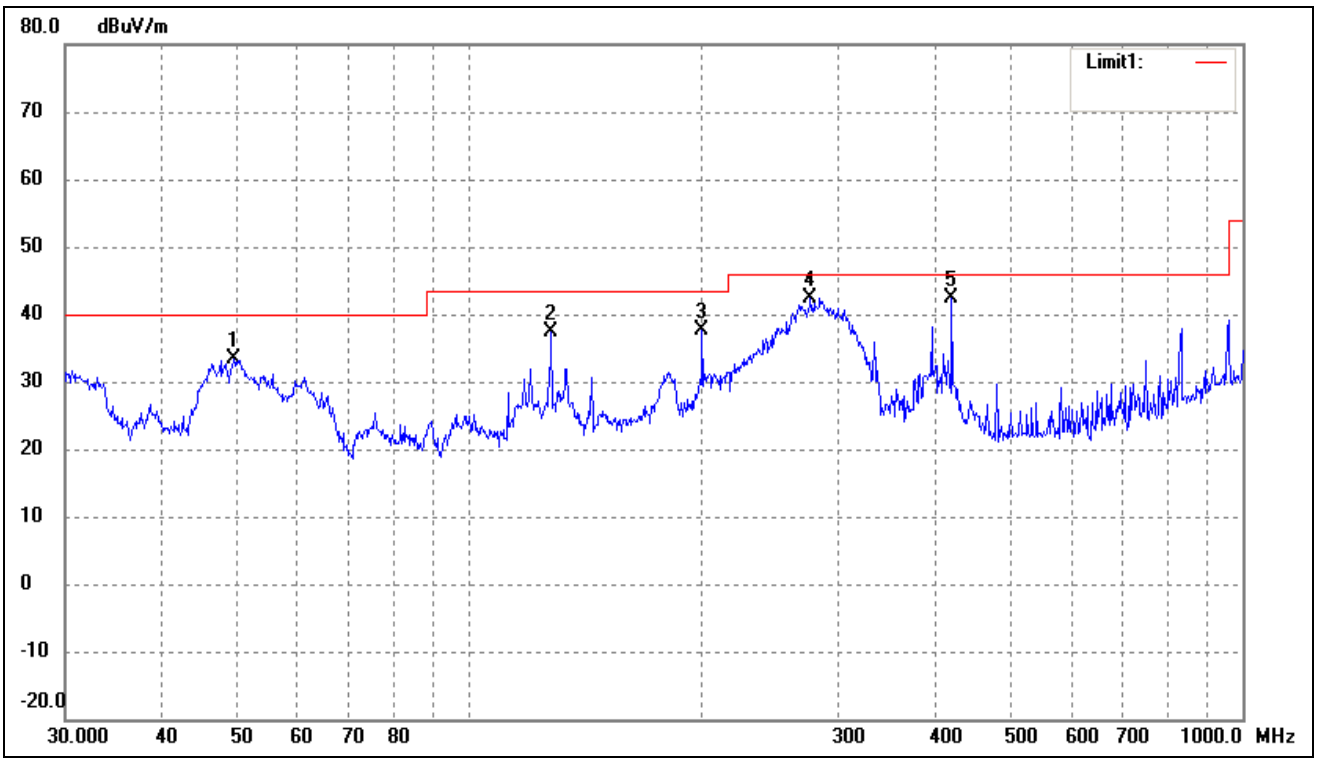


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	31.2893	47.54	-10.60	36.94	40.00	-3.06	178	100	QP
2	45.5347	44.30	-7.46	36.84	40.00	-3.16	272	100	QP
3	297.2241	49.43	-6.24	43.19	46.00	-2.81	360	100	peak
4	446.4141	44.75	-2.21	42.54	46.00	-3.46	126	100	peak
5*	810.2653	40.24	3.86	44.10	46.00	-1.90	360	100	peak

Plot of Radiated Emissions Test Data

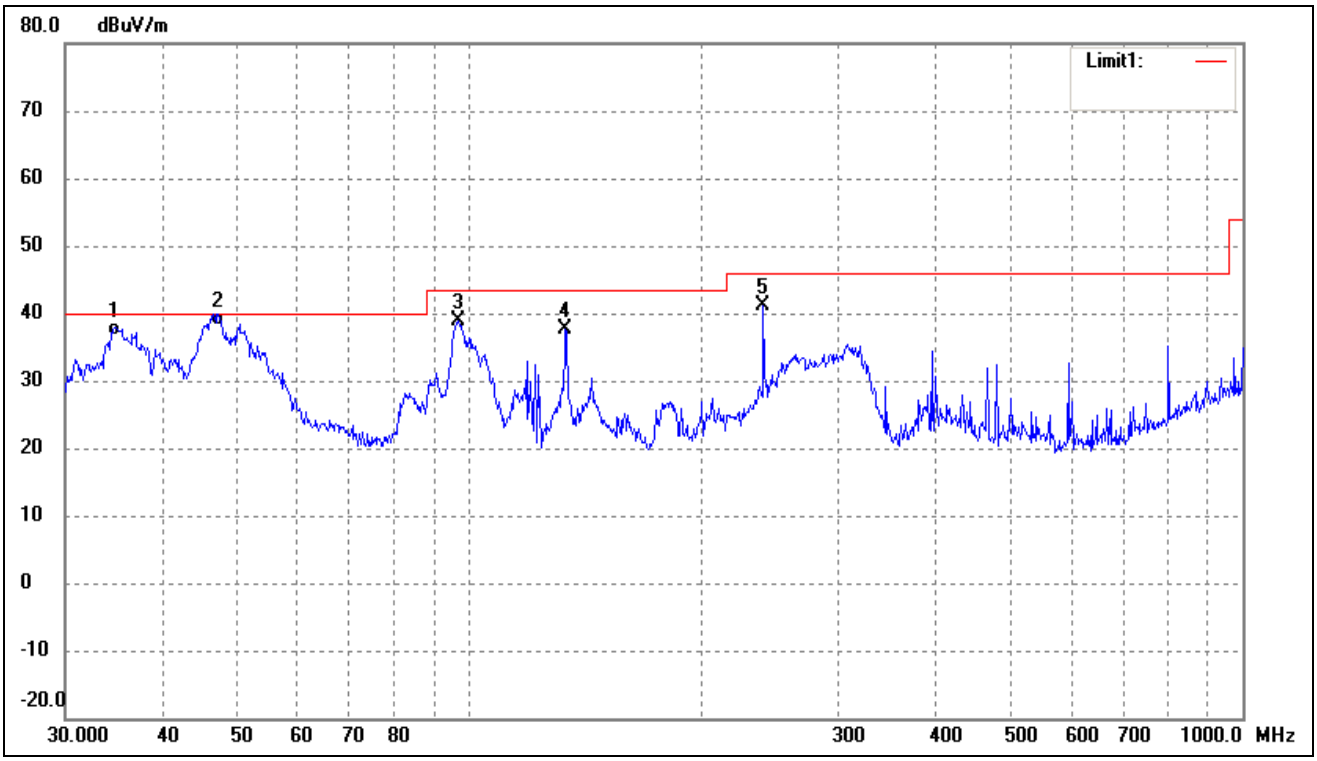
EUT: *IPTV*
Tested Model: *EYE2TV*
Operating Condition: *TM4*
Comment: *AC 120V/60Hz; adapter DC 12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	49.5328	40.71	-7.45	33.26	40.00	-6.74	164	100	peak
2	127.6645	49.68	-12.39	37.29	43.50	-6.21	228	100	peak
3	199.9856	46.77	-9.06	37.71	43.50	-5.79	174	200	peak
4*	276.1236	49.15	-6.79	42.36	46.00	-3.64	360	200	peak
5	420.5803	44.73	-2.46	42.27	46.00	-3.73	336	200	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	34.7601	46.70	-10.11	36.59	40.00	-3.41	90	100	QP
2*	47.3255	45.52	-7.45	38.07	40.00	-1.93	273	100	QP
3	96.7749	48.72	-9.95	38.77	43.50	-4.73	164	100	peak
4	133.1511	50.54	-12.87	37.67	43.50	-5.83	226	100	peak
5	239.9874	48.88	-7.79	41.09	46.00	-4.91	360	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 8GHz, which above 1GHz is close to the noise base The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

******* END OF REPORT *******