TECHNICAL REPORT

Timeway

LABORATORIES

Report No: EMC 0409122
File reference No: 2004-10-18

Applicant: Guangzhou Hua Du Koda Electronics Co., Ltd

Product: MULTI-CHANNEL AMPLIFIER

Model No: AV-1068B

Trademark: KODA

Test Standards:
EN 55013: 2001 +A1:2003
EN 55020: 2002 +A1:2003
EN 61000-3-2:2000
EN 61000-3-3:1995 + A1: 2001

Test result: The EMC testing has been performed on the submitted samples and found in compliance with council EMC Directive 89/336/EEC.

Approved By

Jack Chung

EMC Manager

Dated: October 18, 2004

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

HONG KONG TIMEWAY TECHNOLOGY DEVELOPMENT LIMITED

Rm.1805, 18/F., Wu Sang house, Nathan Road, Mongkok, Kln. HONG KONG

Tel (852) 2781 7498 Fax (852) 2381 2492

TEST REPORT

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TEST REPORT

1.0 General Details

1.1 Test Lab Details

Name : Hong Kong Timeway Technology Development Limited
Address: Rm.1805,18/F., Wu Sang House, Nathan Road, Mongkok, Kln. HONG KONG
Tel: (852) 2781 7498
Fax: (852) 2381 2492

1.2 Applicant Details

Applicant: Guangzhou Hua Du Koda Electronics Co., Ltd.
Address: 33, Hongmian Road, Xinhua Industrial park, Xinhua Town, Hua Du District, Guangzhou City, China
Tel: 86 20 3686 2921
Fax: 86 20 3686 1588

1.3 Description of EUT

Product:	MULTI-CHANNEL AMPLIFIER
Manufacturer:	Guangzhou Hua Du Koda Electronics Co., Ltd.
Model Number:	AV-1068B
Brand Name:	KODA
Additional Model Number:	--
Additional Trade Name	--
Rating:	230V~ 50/60Hz 100W

The Difference between models: --

1.4 Submitted Sample

1 Sample

1.5 Test Duration

2004-09-28 to 2004-10-10

1.6 Test Uncertainty

Calculated measurement uncertainty = ±2.4dB

1.7 Test or witness Engineer

The sample tested by _____

Print Name: Ivy Zhu

TEST REPORT

2. List of Measurement Equipment

2.1 Conducted Emission Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS30	830245/009	RS	2004.2.23	1Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
ISN	NTFM8132	8132137	SCHWARZBECK	2004.6.15	1Year
ISN	NTFM8134	8134109	SCHWARZBECK	2004.6.15	1Year
ISN	NTFM8136	8136112	SCHWARZBECK	2004.6.15	1Year

2.2 Disturbance Power Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS30	830245/009	RS	2004.2.23	1Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Absorbing Clamp	MDS-21	825616/020	RS	2004.2.22	2Year

2.3 Harmonic & Flicker Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Harmonics Flicker Test System	5001ix-CTS-400	X71730	CI	2004.2.24	1Year

2.4 ESD Test Equipment

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
ESD Simulator	NSG435	2103	SCHNAFFNER	2004.2.23	1Year

3. Technical Details

3.1 Investigations Requested

Perform Electromagnetic Interference [EMI] & Electromagnetic Suspectability[EMS] tests for CE Marking

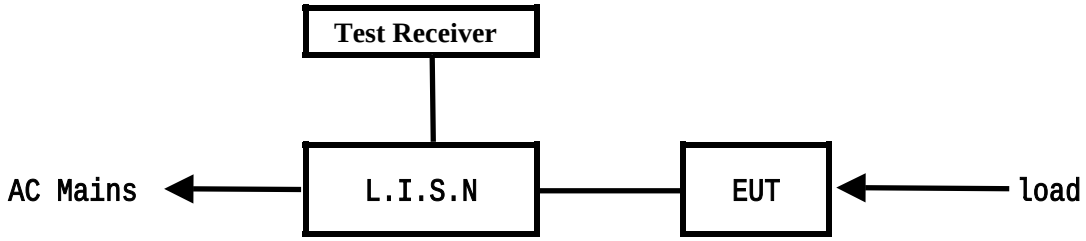
3.2 Test Standards

Test Standards	
EN 55013:2001 +A1:2003	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment Attachment A1:2003 to EN55013:2001
EN 55020:2002 +A1:2003	Immunity from radio interference of broadcast receivers and associated equipment Attachment A1:2003 to EN55020:2002
EN 61000-3-2:2000	Electromagnetic compatibility(EMC)- Part 3-2:Limits-Limits for harmonic current emissions(equipment input current ≤16A per phase)
EN 61000-3-3:1995 + A1: 2001	Electromagnetic compatibility (EMC)- Part 3-3:Limits-Limitation of voltage changes, Voltage fluctuations and flicker in public low-voltage supply systems. For equipment with rated current ≤16A per phase and not subject to conditional connection Amendment A1:2001 to EN610003-3:1995

TEST REPORT

4. Power line Conducted Emission Test

4.1 Schematics of the test

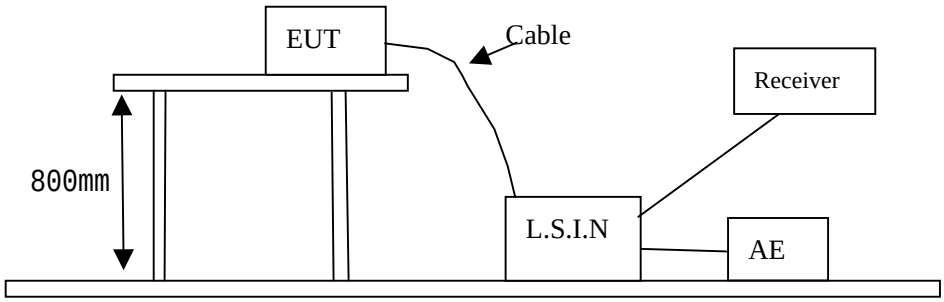


EUT: Equipment Under Test

4.2 Test Method:

The test was performed in accordance with EN 55013：2001

Block diagram of Test setup



4.3 Results and limit line for Conducted Emission

Limits for Conducted Emission test, Please refer to limit line (Quasi-peak) in the following diagram labelled as (QP)

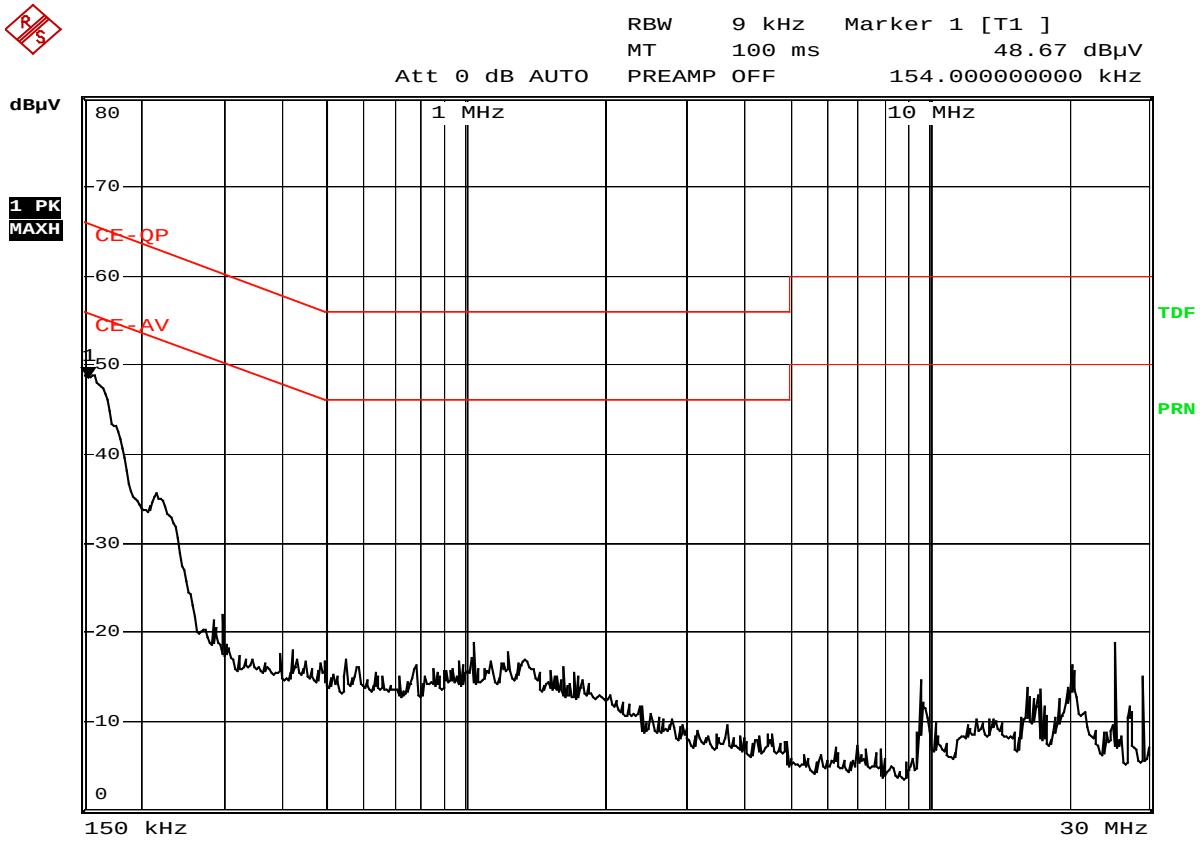
TEST REPORT

A: **Conducted Emission on Live Terminal (150kHz to 30MHz)**

EUT set Condition: **Playing Color Bar and 1KHz Signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 15:50:24

Frequency (MHz)	Reading(dBµV)				Limit (dBµV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.154	29.62	14.50			45.37	35.37

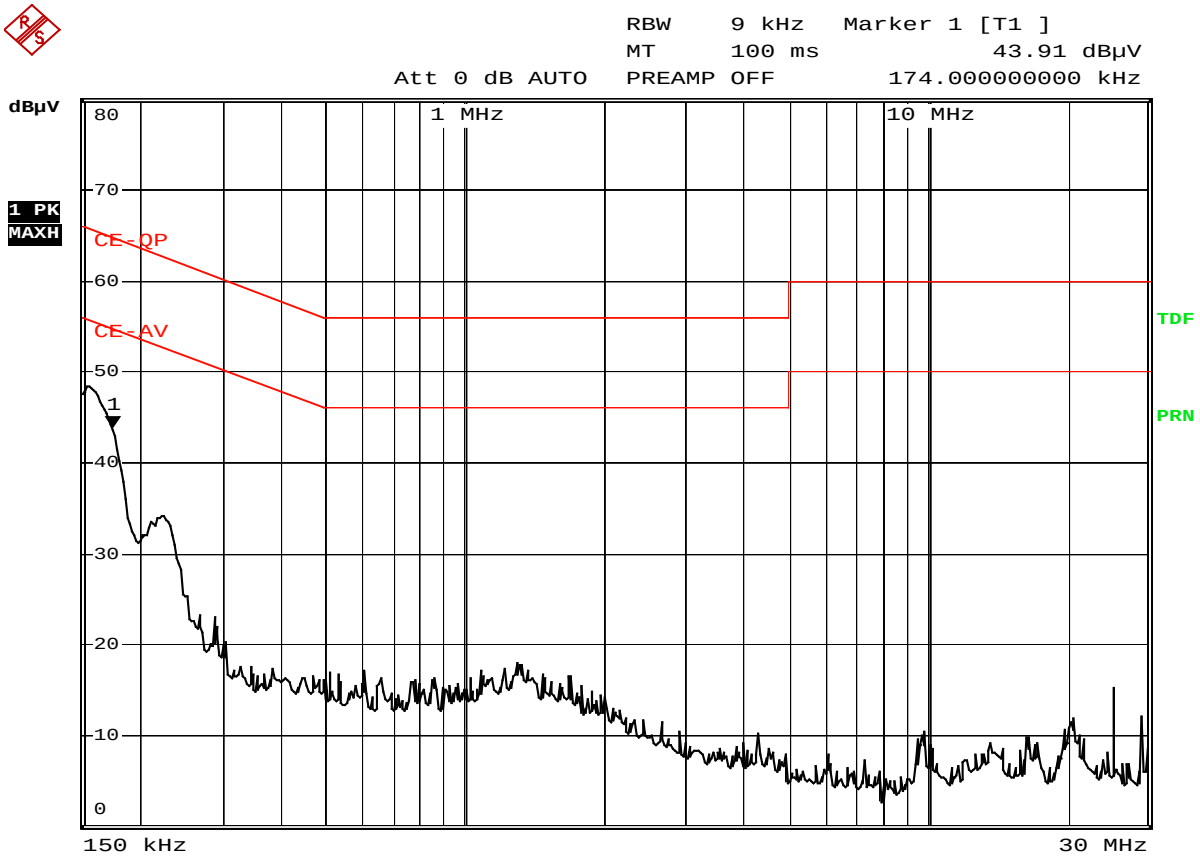
TEST REPORT

B Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT set Condition: Playing Color Bar and 1KHz Signal

Results: Pass

Please refer to following diagram for individual



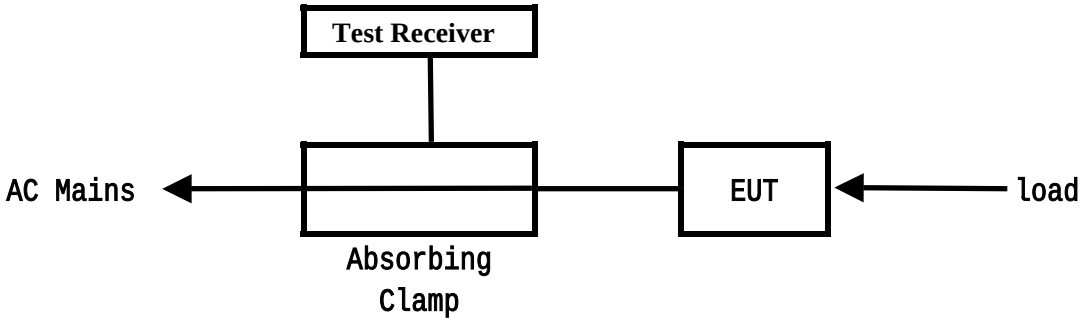
Date: 10.OCT.2004 15:51:35

Frequency (MHz)	Reading(dBµV)				Limit (dBµV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.154			40.70	14.52	45.37	35.37

TEST REPORT

5. Disturbance Power Test

5.1 Schematics of the test

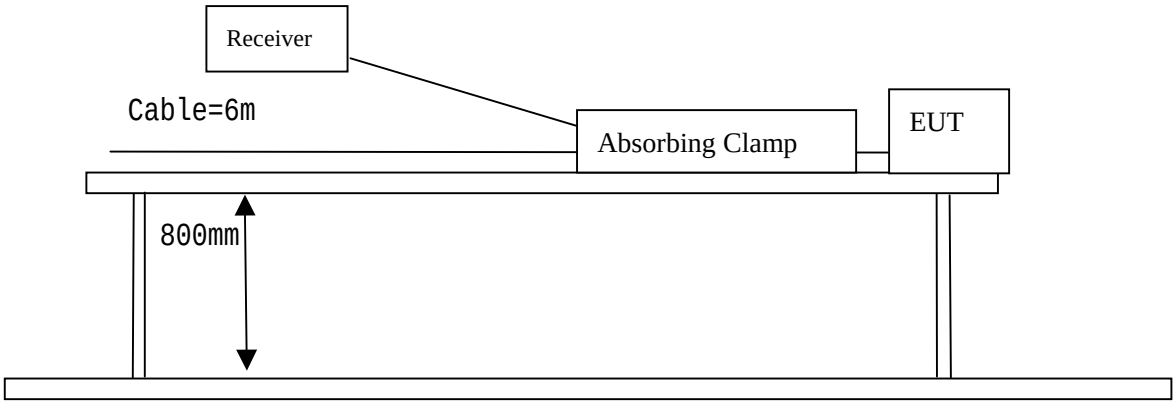


EUT: Equipment Under Test

5.2 Test Method:

The test was performed in accordance with EN 55013:2001

Block diagram of Test setup



5.3 Results and limits line for Distance power (230V ac 50Hz)

Limits for Disturbance power Test, Please refer to limit lines (Quasi-peak) in the following diagram labelled as (QP)

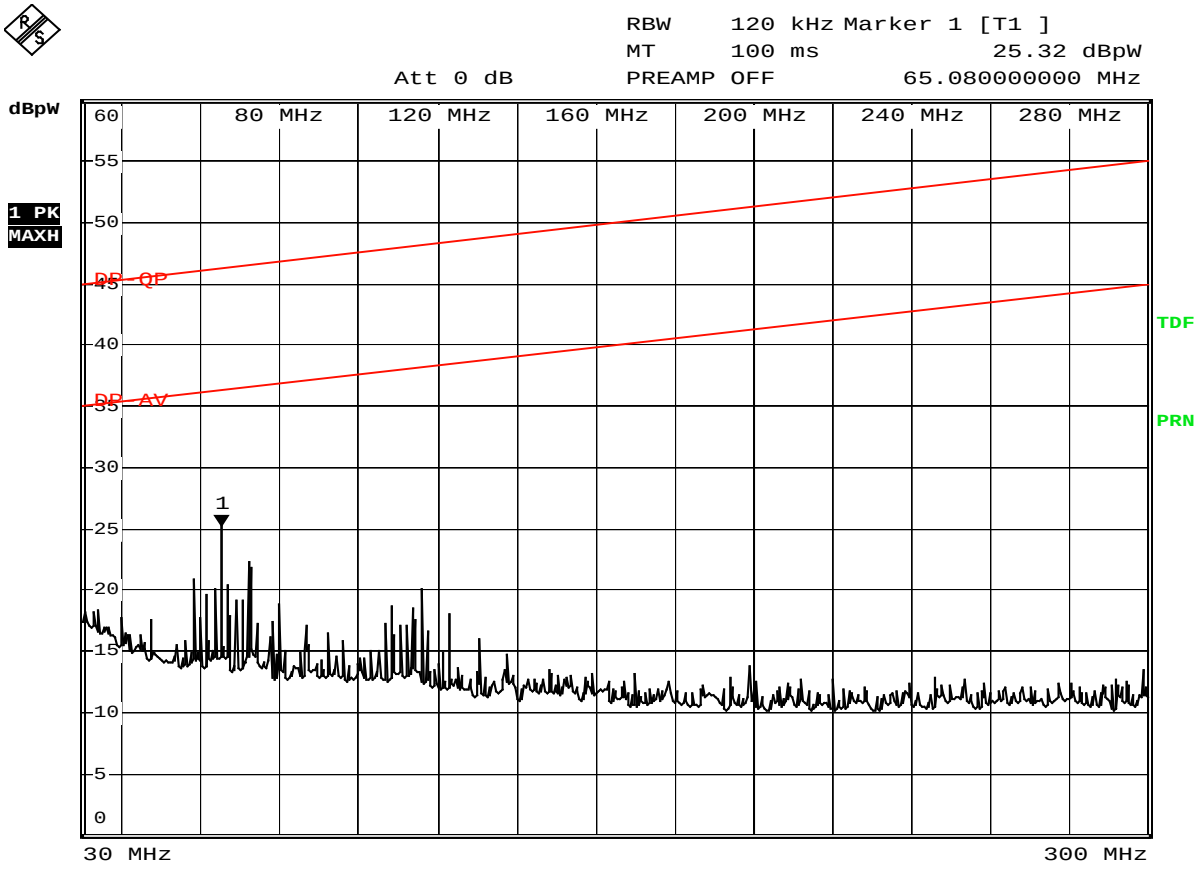
TEST REPORT

A: **Conducted Disturbance Power on AC LINE (30Hz to 300MHz)**

EUT set Condition: **Playing colour bar and 1k Hz signal**

Results: **Pass**

Please refer to following diagram for individual



Date: 10.OCT.2004 15:56:52

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
65.08	25.04	24.37	46.30	36.30

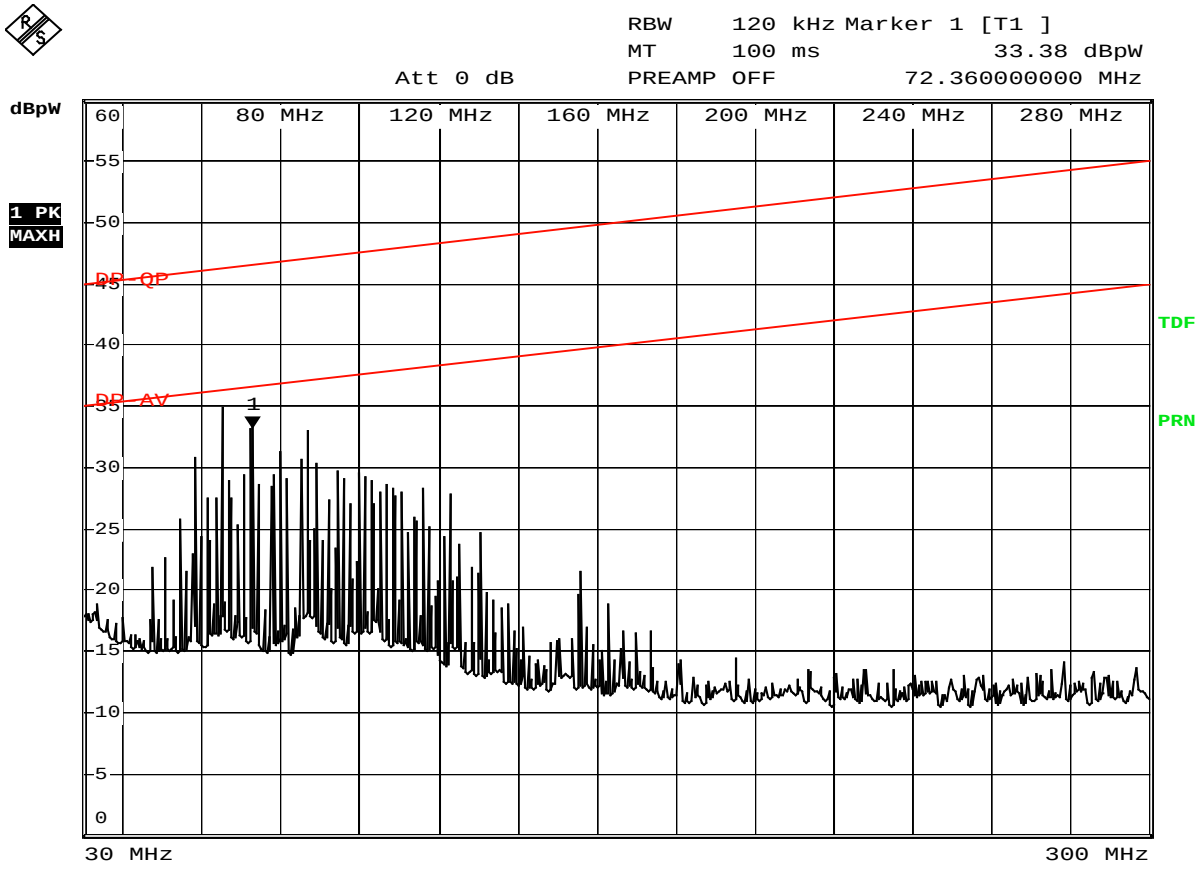
TEST REPORT

B: **Conducted Disturbance Power on Center (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: **Pass**

Please refer to following diagram for individual



Date: 10.OCT.2004 16:16:35

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average

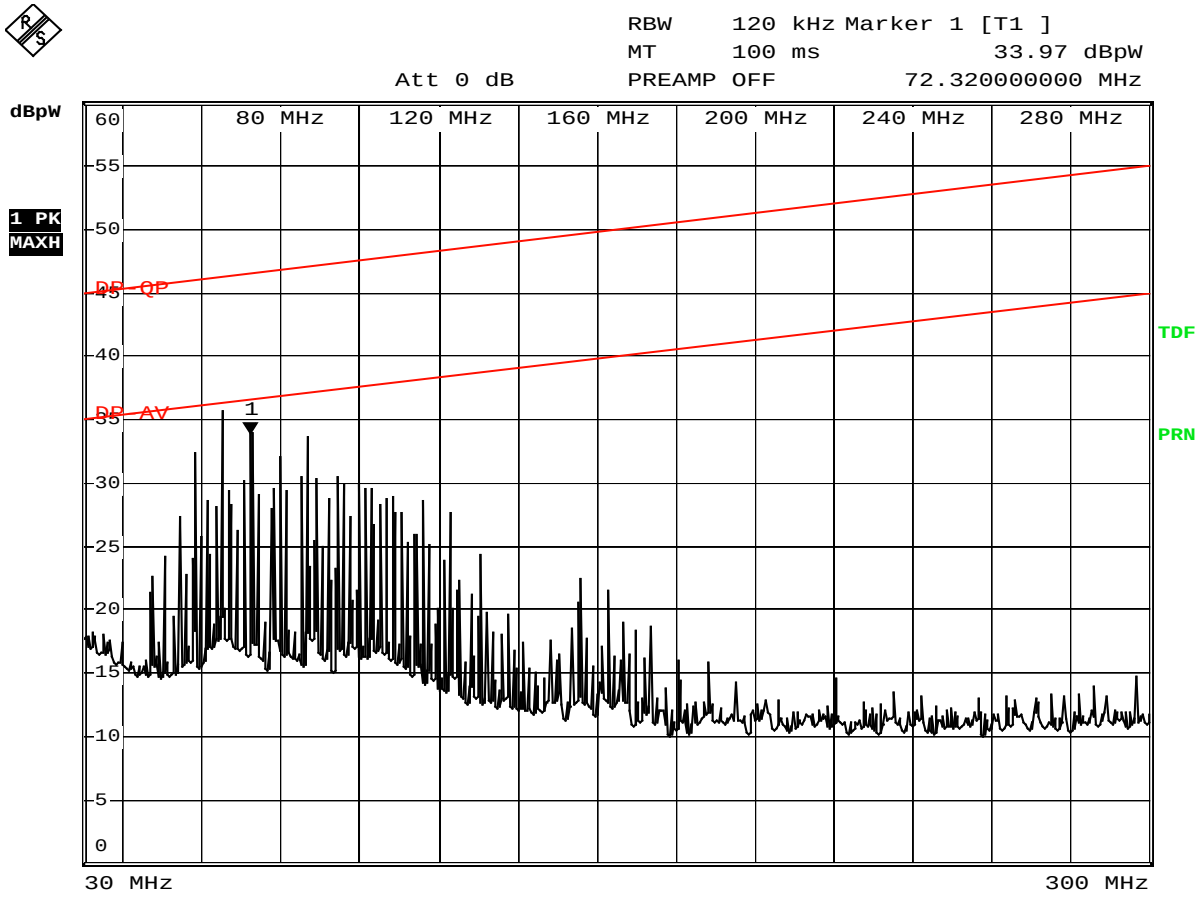
- Test data shows much less than the limit, no necessary take down the results.

C **Conducted Disturbance Power on FL FR (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:12:52

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
57.92	29.18	26.88	46.00	36.00
65.12	35.26	34.60	46.30	36.30
72.32	33.57	32.58	46.56	36.56

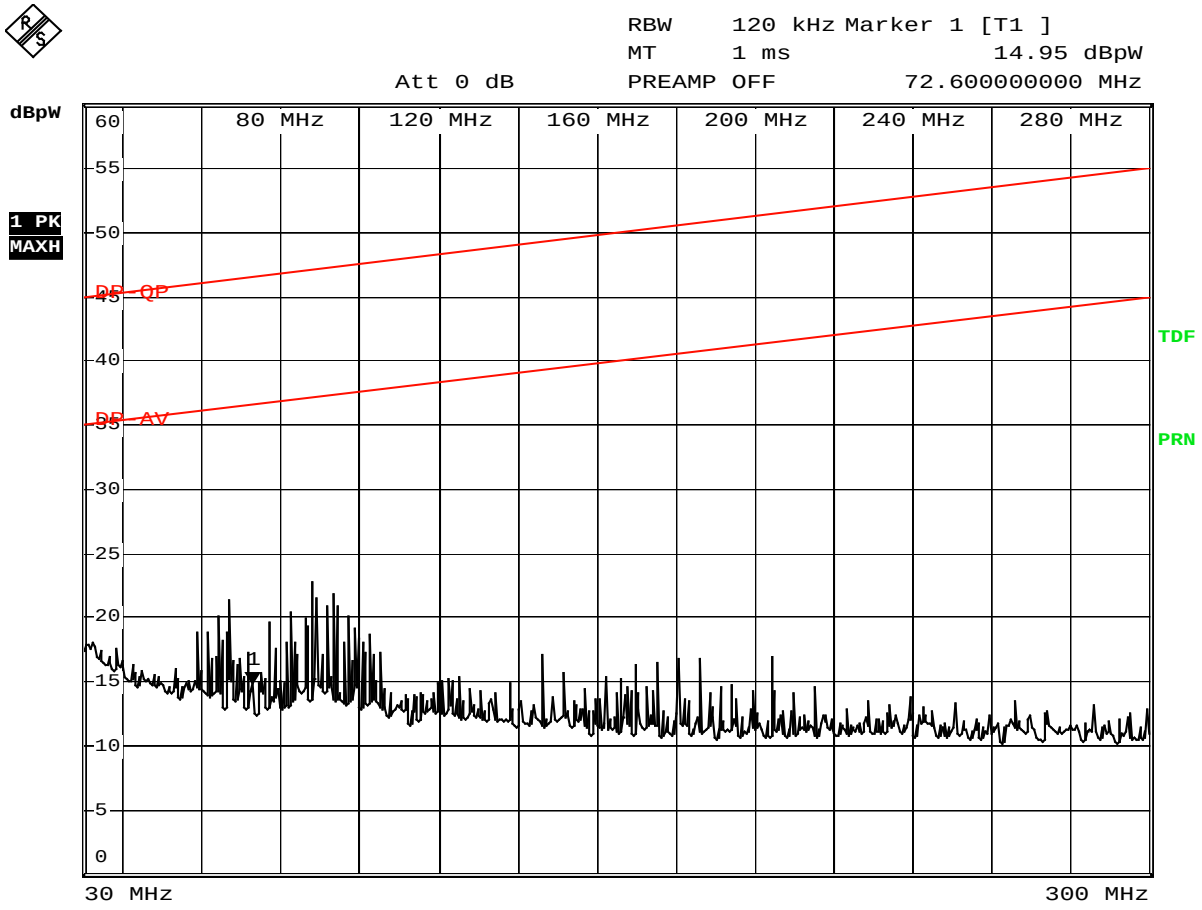
TEST REPORT

D: **Conducted Disturbance Power on Output Cen(30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: **Pass**

Please refer to following diagram for individual



Date: 10.OCT.2004 16:30:25

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average

- Test data shows much less than the limit, no necessary take down the results.

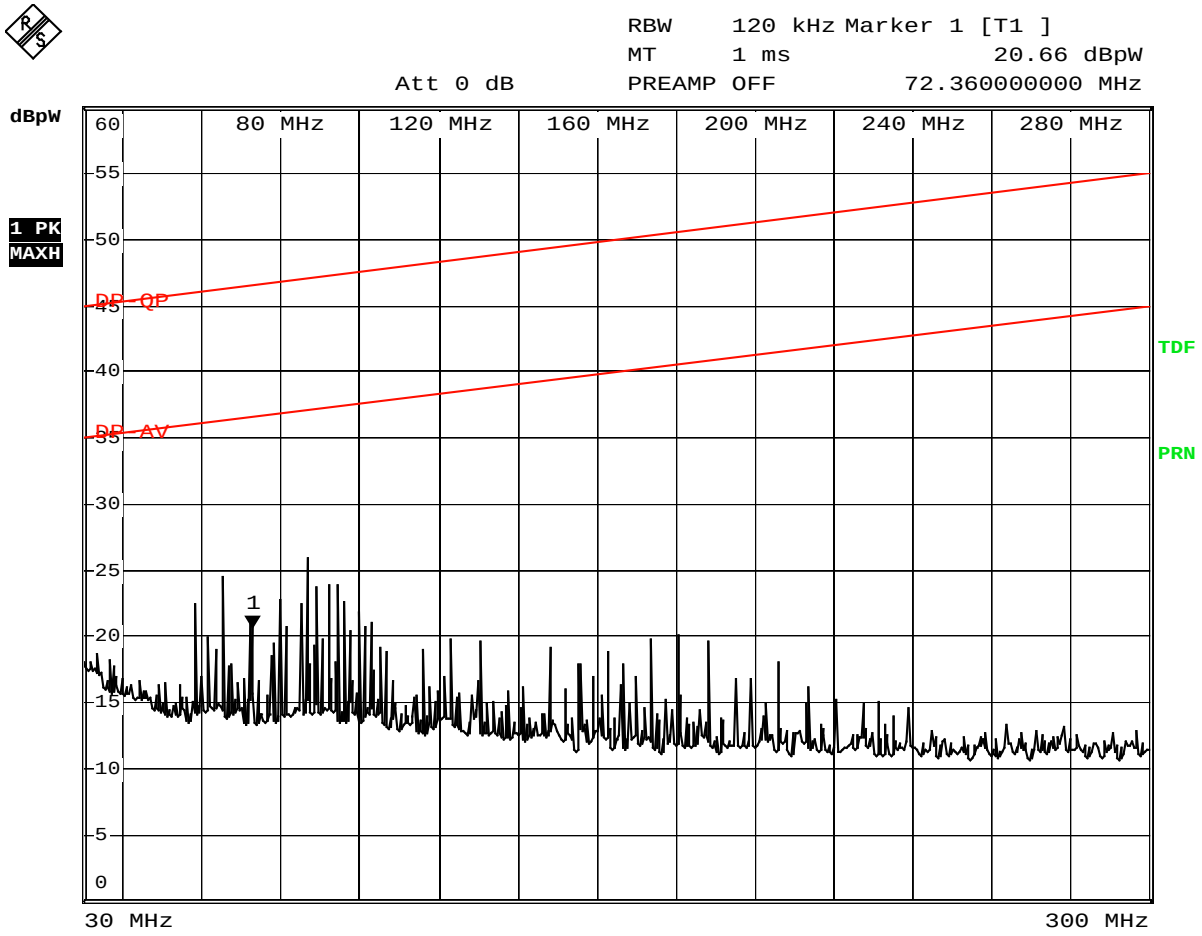
TEST REPORT

E: **Conducted Disturbance Power on Output FL FR (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:23:25

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average

- Test data shows much less than the limit, no necessary take down the results.

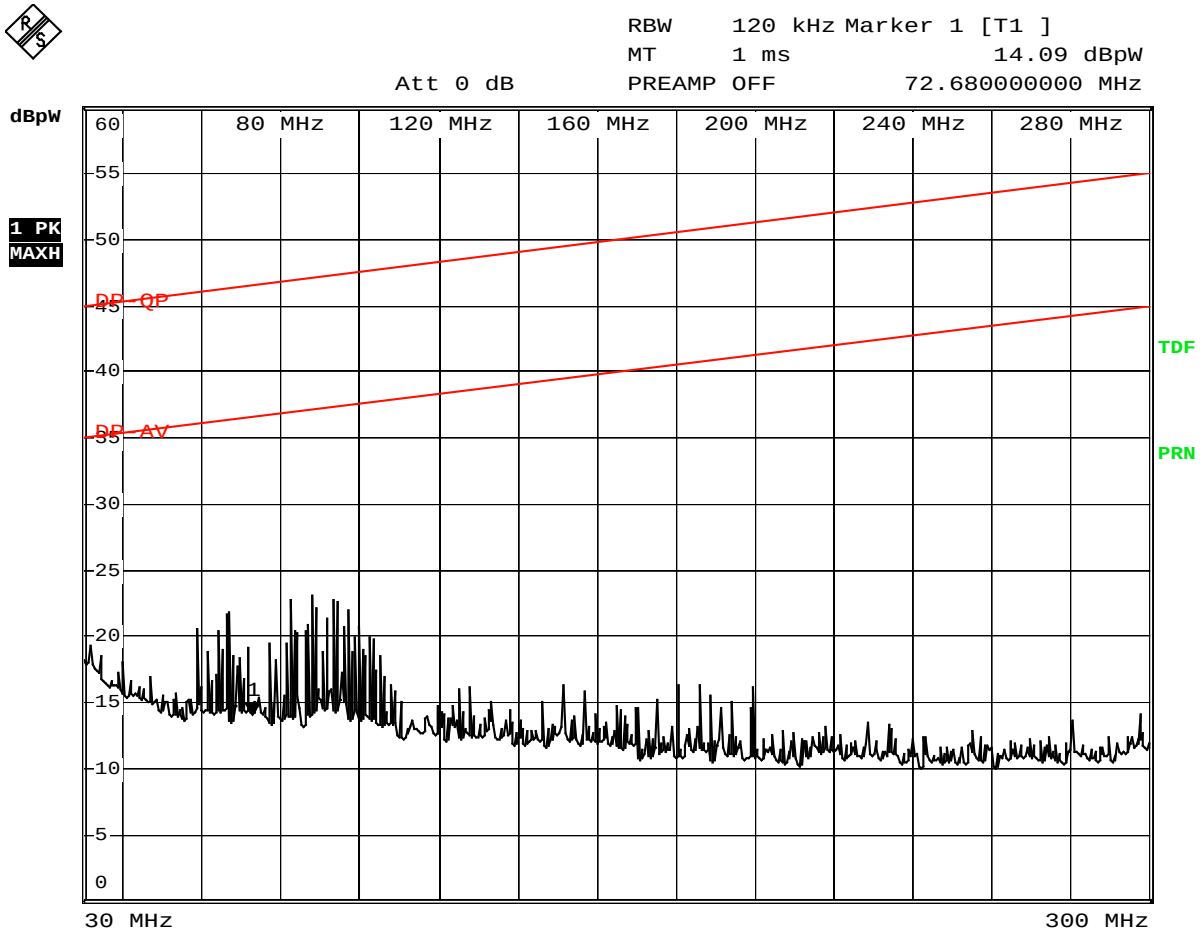
TEST REPORT

F: **Conducted Disturbance Power on Output SL SR(30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:28:29

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average

- Test data shows much less than the limit, no necessary take down the results.

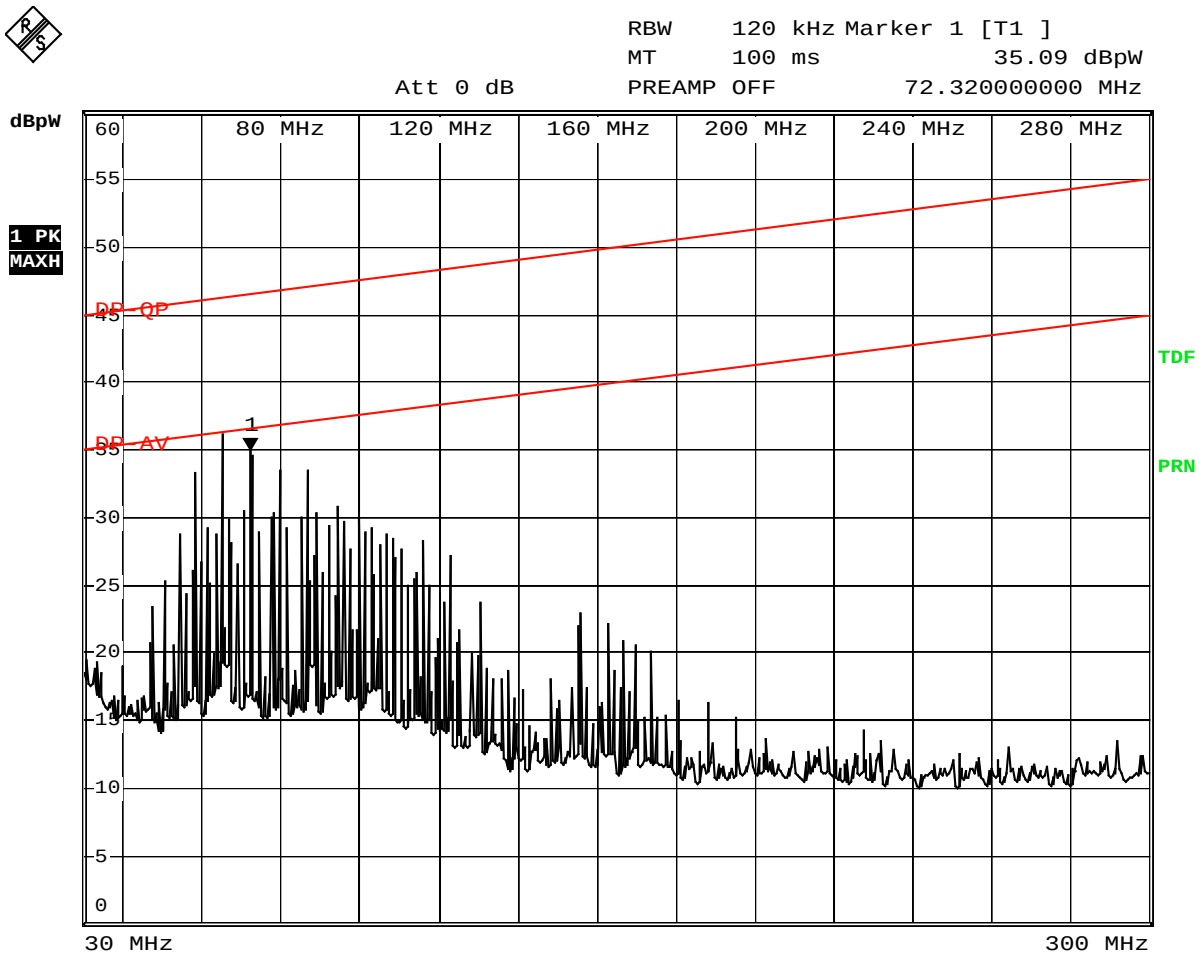
TEST REPORT

G: **Conducted Disturbance Power on Tape (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:08:12

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
57.88	32.37	31.63	46.00	36.00
65.12	35.70	34.98	46.30	36.30
73.23	34.21	33.15	46.59	36.59

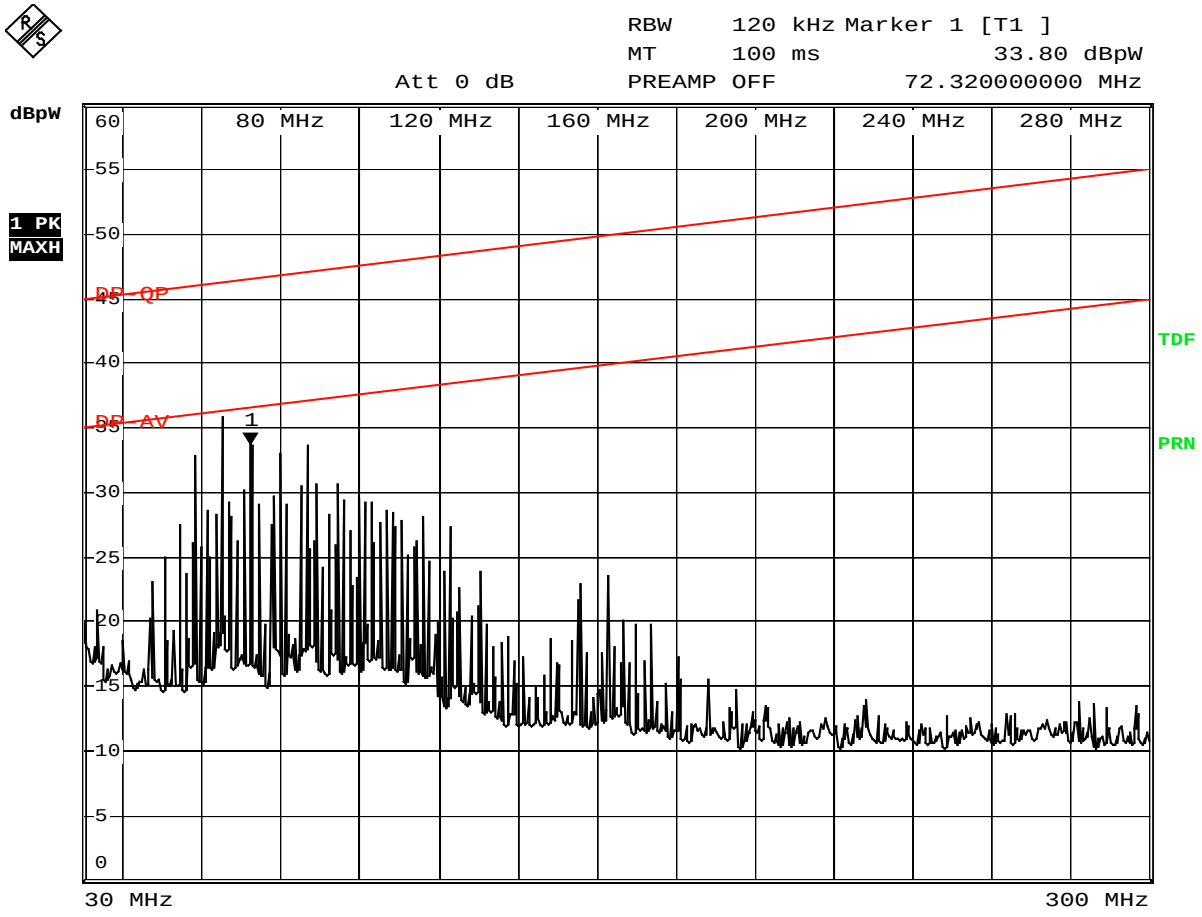
TEST REPORT

H: **Conducted Disturbance Power on Tuner (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:10:27

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
57.88	31.85	31.03	46.00	36.00
65.12	35.38	34.76	46.30	36.30
72.32	33.26	32.48	46.56	36.56

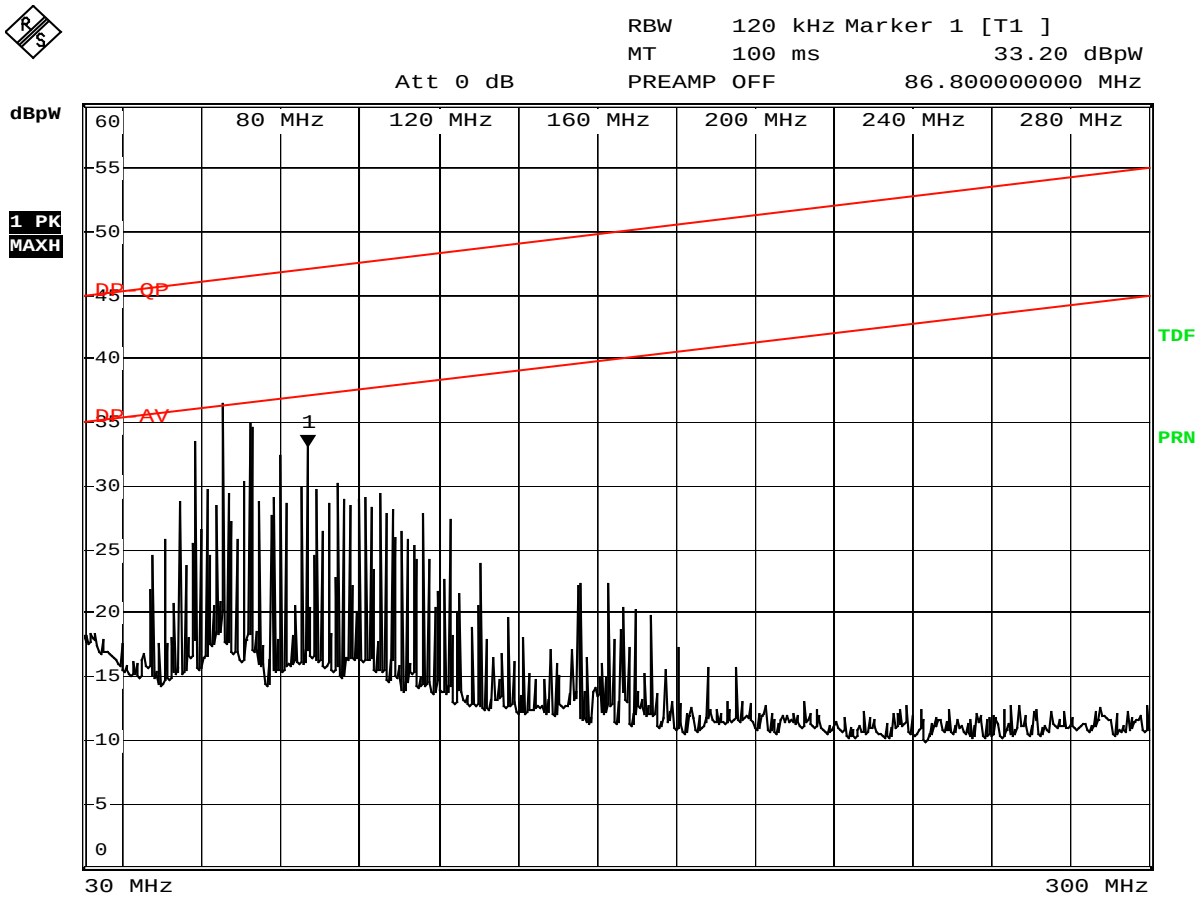
TEST REPORT

I: **Conducted Disturbance Power on VCD CD (30MHz to 300MHz)**

EUT set Condition: **Playing color bar and 1k Hz signal**

Results: Pass

Please refer to following diagram for individual



Date: 10.OCT.2004 16:05:27

Frequency (MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
57.88	32.90	32.05	46.00	36.00
72.72	35.76	34.64	46.56	36.56
86.80	33.11	32.40	47.07	37.07

6. Magnetic field Immunity test

Test standard: EN 55020: 2002

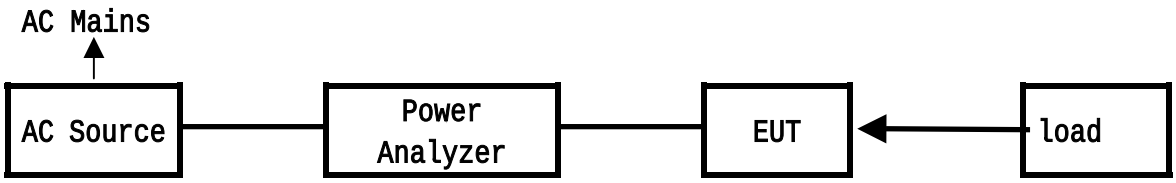
Test result: N/A

* N/A ---The test is not applicable for the product.

TEST REPORT

7. Voltage Fluctuations &Flicker Test

7.1 Schematic of the test



EUT: Equipment Under Test

7.2 Test Method:

The test was performed in accordance with EN 61000-3-3:1995

7.3 Test Results

Result: **Pass**

Please refer to following diagram for individual

Maximum Occurring Levels:

Ut: 230.1 (EUT Test RMS Voltage)

Pst:	0.029	Limit=	1.0	(The Highest short Term Flicker Value)
Plt:	0.013	Limit=	0.65	(The Highest Long Term Flicker Value)
dt(%):	0.28	Limit=	4%	(The Highest instantaneous Voltage Change (10ms))
dc(%):	0.00	Limit=	3%	(The highest Relative steady state voltage change (1sec))
dmax:	0.52	Limit=	4%	(The highest Max Relative voltage change)
Tdt:	0.28	Limit=	200ms	(The Max Time(in milli-sec) that dt exceeds 3%)

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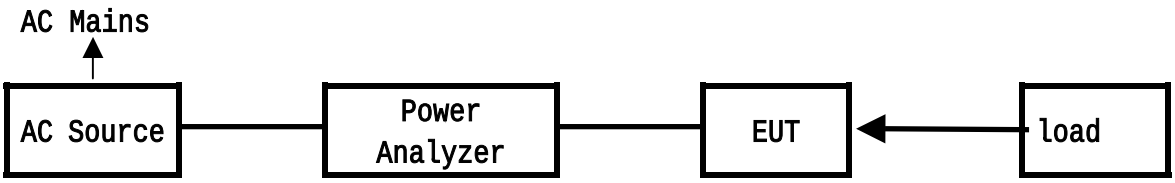
8. Harmonic Current Emission Test

8.1 Schematic of the test



EUT: Equipment Under Test

8.2 Test Method:

The test was performed in accordance with EN 61000-3-2:2000

*: The Level of the product is : CLASS A

TEST REPORT

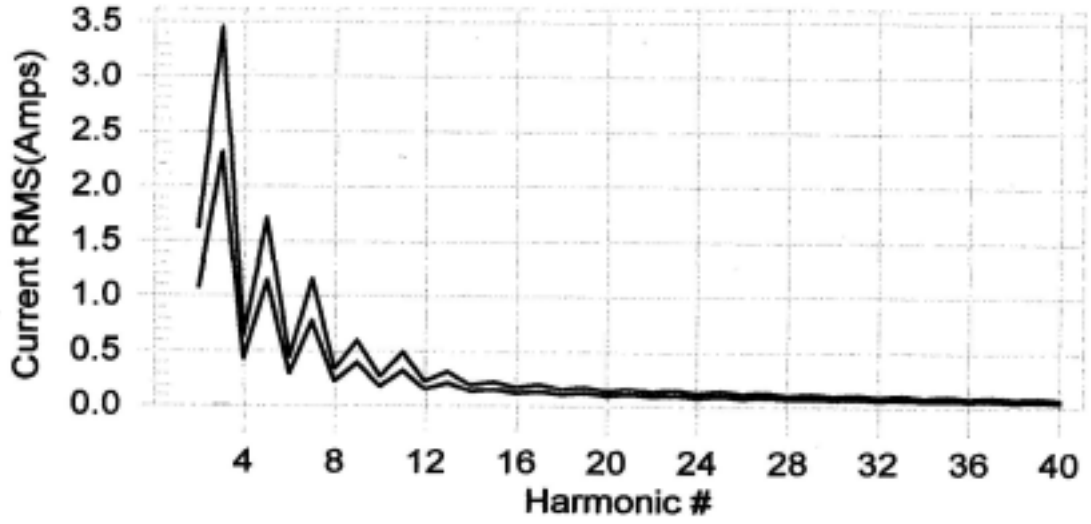
8.3 Test Results

Please refer to the following pages

Rating: 100W

Result: Pass

Harmonics and Class A limit line **European Limits**



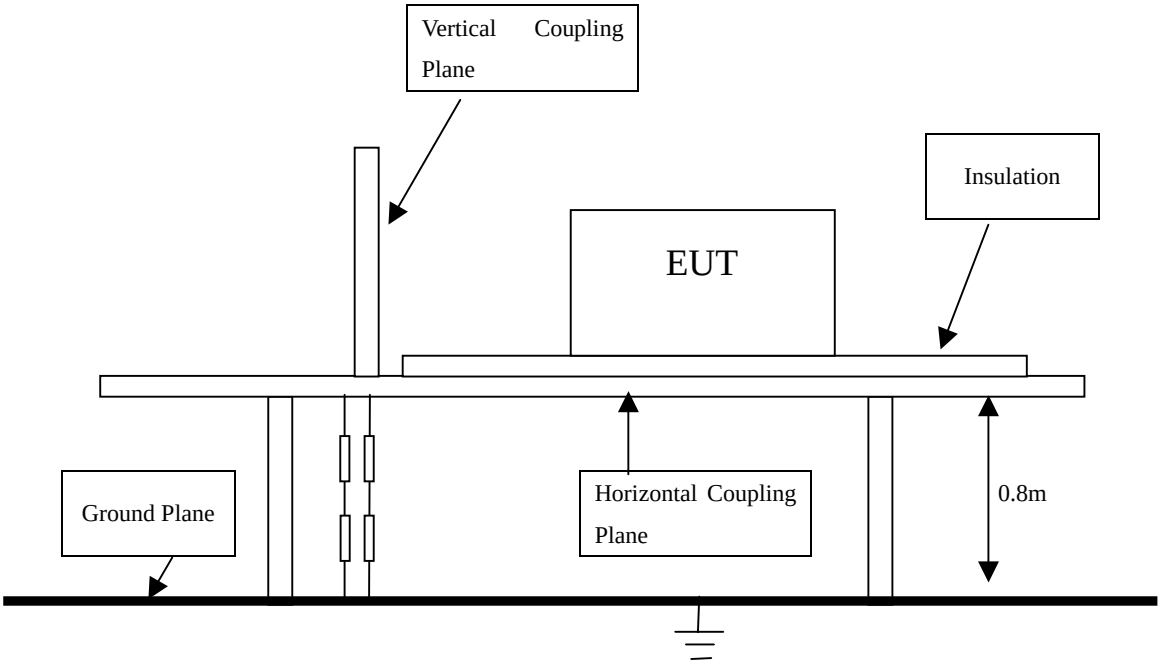
Test result: Pass Worst harmonic was #40 with 0.34% of the limit.

Harmonic results as a% of the limits

No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%
1		11	16.11	21	11.59	31	7.93
2	42.42	12	14.11	22	13.17	32	8.68
3	23.99	13	14.69	23	10.19	33	8.55
4	17.41	14	12.94	24	10.21	34	7.18
5	6.26	15	12.49	25	10.62	35	7.26
6	17.59	16	12.40	25	11.42	36	7.39
7	9.12	17	12.96	27	9.00	37	8.27
8	10.15	18	13.34	28	9.74	38	7.07
9	11.04	19	11.38	29	10.40	39	6.67
10	10.01	20	18.31	30	9.33	40	12.57

9.0 Electrostatic Discharge

9.1 Schematic of the test



9.2 Test method

The test was performed in accordance with EN 61000-4-2:1995

9.3 Test severity

±4kV for direct & in-direct Contact Discharge

±8kV for air Discharge

Performance Criterion Require: B (Please see following table)

9.4 Susceptibility performance Criteria and Severity level

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

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Severity Level

Level	Test Voltage Direct & in-direct contact Discharge (kV)	Test Voltage Air discharge(kV)
1	±2kV	±2kV
2	±4kV	±4kV
3	±6kV	±8kV
4	±8kV	±15kV

9.5 Test Result

Please refer to the following table for individual results.

Location	Discharge Method	Test Voltage	Results
HCP (Horizontal coupling plane)		±4kV	Pass
VCP(Vertical Coupling plane)		±4kV	Pass
		±4kV	Pass
Enclosure		±4kV	Pass
Enclosure		±8kV	Pass
		±8kV	Pass

Remark: Calculated measurement uncertainty= ±0.2kV

10. Product Labeling

10.1 CE Mark label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.

10.2 Mark location On the rear enclosure

Appendix

Product photographs

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Appendix

Product photographs

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Appendix

Product photographs

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Appendix

Product photographs

--End of the report--