EMC Test Report

Issued Date	: Feb. 25, 2010
Project No.	: 1001C020
Equipment	: Guitar Amplifier
Model Name	: D100;D100C
Applicant	: Armadillo Enterprises Inc.
Address	: 4924 W, Waters Ave., Tampa, FL 33634, USA.
Manufacturer	: EMINENCE DONGGUAN ENTERPRISES CO.,LTD.
Address	: DI-YONG,GAOBU TOWN,DONGGUAN CITY,GUANGDONG,P.R.CHINA.

Tested by:
Neutron Engineering Inc. EMC Laboratory
Date of Test:
Jan. 27, 2010 ~ Feb. 24, 2010

Testing Engineer: _____ (Josh Lin)

Technical Manager: _____ (Jeff Yang)

Authorized Signatory: _____ (Steven Lu)

NEUTRON ENGINEERING INC.

No.3.JinShaGang 1st Road, ShiXia, DaLang Town, DongGuan, China.
TEL : +86-0769- 8318-3000 FAX : +86-0769- 8319-6000

Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

Neutron's reports apply only to the specific samples tested under conditions. It is manufacture 's responsibility to ensure that additional production units of this model are ma nufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

Neutron's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **Neutron-self**, extracts from the test report shall not be reproduced except in full with **Neutron**'s authorized written approval.

Neutron's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Table of Contents

Table of Contents

Table of Contents

1. CERTIFICATION

Equipment :	Guitar Amplifier
Brand Name :	DIME
Model Name :	D100;D100C
Applicant :	Armadillo Enterprises Inc.
Date of Test :	Jan. 27, 2010 ~ Feb. 24, 2010
Standards :	EN 55103-1:1996
	EN 55103-2:1996
	EN 55013:2001+A1:2203+A2:2006
	EN 61000-3-2:2006
	EN 61000-3-3:1995+A1:2001+A2:2005
	IEC 61000-4-2: 2001
	IEC 61000-4-3: 2006
	IEC 61000-4-4: 2004
	IEC 61000-4-5: 2005
	IEC 61000-4-6: 2006
	IEC 61000-4-8: 2001
	IEC 61000-4-11: 2004

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-EMC-1-1001C020) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

EMC Emission EN 55103-1:1996				
Test Description	Test Method	Limit	Judgment	Remark
Conducted Emission	EN 55022, 30-1000MHz	Class B	PASS	
Radiated Emission	EN 55022, 0.15-30MHz	Class B	PASS	
Signal, control and dc power port emissions	CISPR G recommendation, 0.15-30MHz	------	PASS	
Magnetic Emissions (Rock mount)	50Hz-50KHz test at 10cm test method outlined in Annex A of standard	------	N/A	NOTE (2)
Magnetic Emissions (Non-Rock mount)	50Hz-50KHz test at 1m test method outlined in Annex A of standard	------	PASS	
Harmonic Current Emission	EN 61000-3-2:2006	Class A	PASS	NOTE (3)
Voltage Fluctuations & Flicker	EN 61000-3-3:1995 +A1: 2001+A2:2005	------	PASS	
Clicks on AC (Discontinuous interference)	EN 55014 – required if device produces click interference	------	N/A	NOTE (4)
In-Rush Current AC power	Required on all AC power ports	------	N/A	NOTE (5)
Antenna port conducted emission	EN 55013,30-1000MHz	------	PASS	

NOTE:

(1) ” N/A” denotes test is not applicable in this Test Report.
(2) In accordance with manual instructions, the product need not be rock mount.
(3) The power consumption of EUT is less than 75W and no Limits apply.
(4) No clicks.
(5) No limit, But manufacturer must state the peak inrush current in the user-documentation.

EMC Immunity EN 55103-2:1996				
Test Description	Test Method	Performance Criteria	Judgment	Remark
Electrostatic Discharge	EN 61000-4-2,Enclosure	B	PASS	
RF electromagnetic field	EN 61000-4-3,Enclosure	A	PASS	
Fast transients	EN 61000-4-4,AC input and power ports.	B	PASS	
	Signal and control ports with cables longer than 3m	B	N/A	NOTE (1)
	DC ports longer than 3m	B	N/A	NOTE (1)
	Functional Earth ports	B	N/A	NOTE (1)
Surges	AC input and power ports.	B	PASS	
Injected Current	EN 61000-4-6,AC input and power ports.	A	PASS	
	Signal and control ports with cables longer than 3m	A	N/A	NOTE (1)
	Input and output DC ports than longer than 3m	A	N/A	NOTE (1)
	Functional Earth ports	A	N/A	NOTE (1)
Volt. Interruptions Volt. Dips	EN 61000-4-11, Input AC port All dips/interrupts synchronized with zero crossing	B / C / C **NOTE (2)**	PASS	
Magnetic Fields Refer Annex A of EN 55103 for details	Enclosure No-Rack mount: Use Helmholtz coil/large loop	A	PASS	
	Enclosure -Rack mount: Using small loop as per Mil Std 461	A	N/A	NOTE (1)
Audio Frequency Common Mode Refer Annex B of EN 55103	Balanced signal and control ports which may exceed 10m	A	N/A	NOTE (1)

NOTE:

(1) ” N/A” denotes test is not applicable in this Test Report.

(2) Voltage dip: 100% reduction – Performance Criteria **B**

Voltage dip: 40% reduction – Performance Criteria **C**

Voltage Interruption: ＞95% reduction – Performance Criteria **C**

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **C01/OS02** at the location of No.3.JinShaGang 1st Road, ShiXia, DaLang Town, DongGuan, China.

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95**%。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
OS-01	ANSI	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
OS-02	ANSI	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	H	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	H	2.66	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Guitar Amplifier
Brand Name	DIME
Model Name	D100;D100C
OEM Brand/Model Name	N/A
Model Difference	Model difference is distinguish different sales area, the rest are the same.
Product Description	The EUT is a Guitar Amplifier. Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power Source	AC mains.
Power Rating	I/P AC 100-240V, 50-60Hz
Connecting I/O Port(s)	Please refer to the User's Manual
Products Covered	N/A
EUT Modification(s)	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

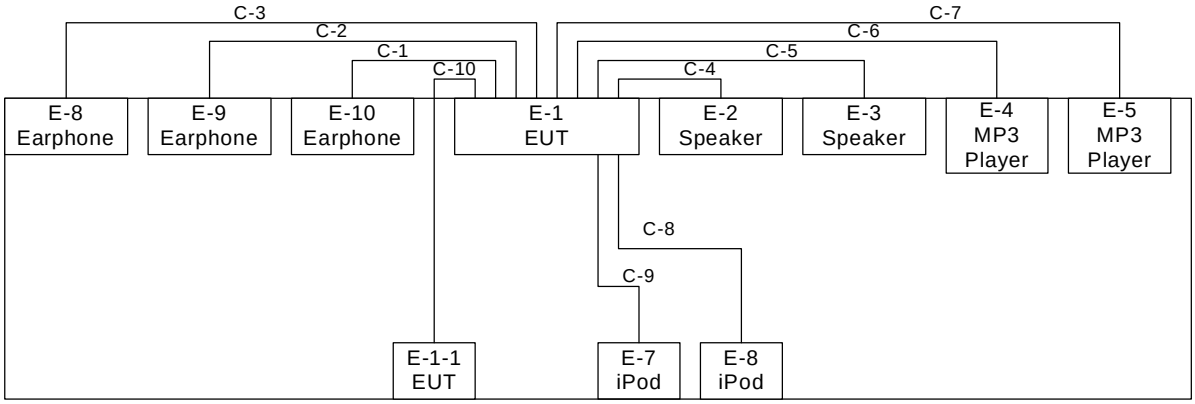
Pretest Mode	Description
Mode 1	LOW LEVEL IN
Mode 2	HIGH LEVEL IN

For Conducted / Radiated Test	
Final Test Mode	Description
Mode 1	LOW LEVEL IN

For Harmonics/Flicks Test	
Final Test Mode	Description
Mode 1	LOW LEVEL IN

For EMS Test	
Final Test Mode	Description
Mode 1	LOW LEVEL IN

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1: Audio Cable
C-2: Audio Cable
C-3: Audio Cable
C-4: Audio Cable
C-5: Audio Cable
C-6: Audio Cable
C-7: Audio Cable
C-8: Audio Cable
C-9: Audio Cable
C-10: Singal Cable

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Guitar Amplifier	DIME	D100	DOC	N/A	EUT
E-2	Speaker	Philips	N/A	N/A	N/A	
E-3	Speaker	Philips	N/A	N/A	N/A	
E-4	MP3 Player	DELL	DJ512M	N/A	5TMY781	
E-5	MP3 Player	DELL	DJ512M	N/A	5TMY789	
E-6	iPod nano (2G)	Apple	A1199	DOC	YM7214GEVQ5	
E-7	iPod nano(8G)	Apple	A1285	DOC	YM850DPM2ME	
E-8	Earphone	Apple	N/A	DOC	N/A	
E-9	Earphone	Dell	N/A	DOC	N/A	
E-10	Earphone	Dell	N/A	DOC	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	1.5m	
C-2	YES	NO	1.5m	
C-3	YES	NO	1.5m	
C-4	NO	NO	1.8m	
C-5	NO	NO	1.8m	
C-6	YES	NO	1.8m	
C-7	YES	NO	1.8m	
C-8	YES	NO	1.8m	
C-9	YES	NO	1.8m	
C-10	NO	NO	3.6m	

Note:

(1) The support equipment was authorized by Declaration of Conformity.
(2) For detachable type I/O cable should be specified the length in m in『Length』column.

4. EMC EMISSION TEST

4.1CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (FREQUENCY RANGE 150KHZ-30MHZ)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Jun.01.2010
2	LISN	Rolf Heine	NNB-2-16Z	99044	Jun.01.2010
3	50Ω Terminator	SHX	TF2-3G-A	08122901	Jun.01.2010
4	Transient Limiter	Agilent	11947A	3107A03668	Jun.01.2010
5	Test Cable	N/A	C-06_C03	N/A	Nov.16.2010
6	Test Receiver	R&S	ESCI	100382	Jun.02.2010

Remark: ” N/A” denotes No Model Name, Serial No. or No Calibration specified.

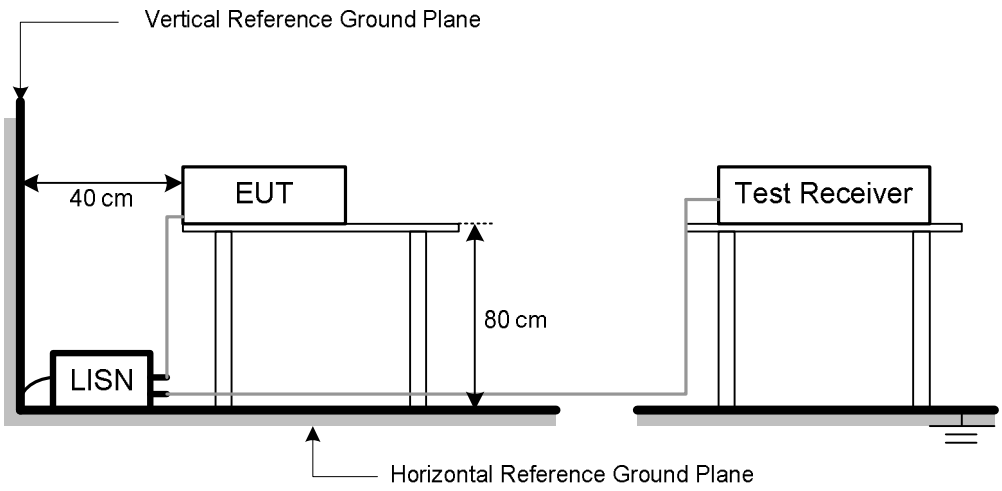
4.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.

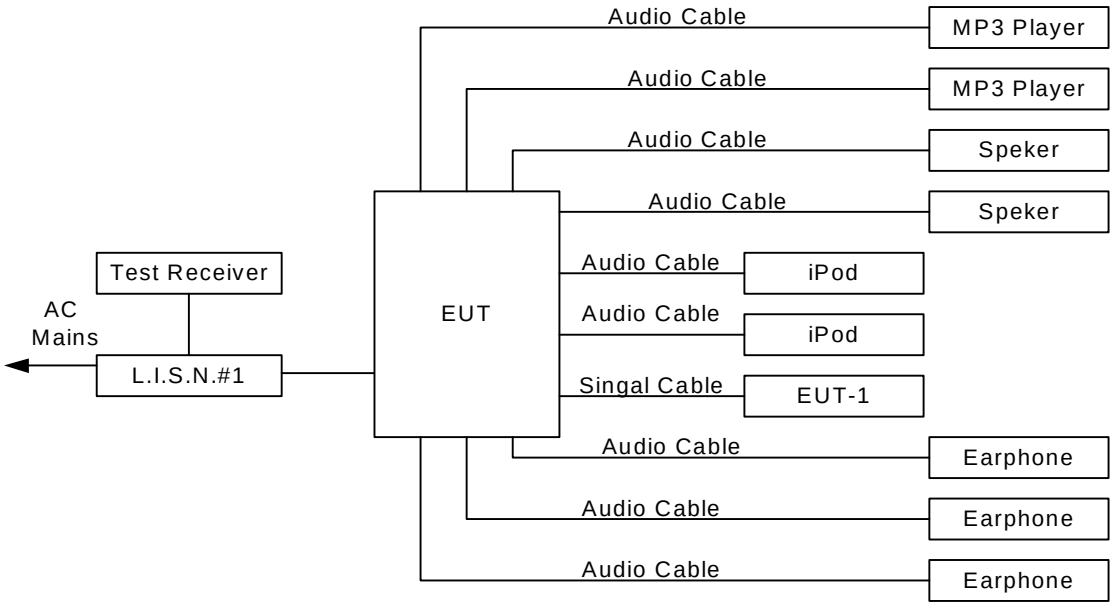
4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 BLOCK DIAGRAM OF TEST SETUP



4.1.7 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The sequence used is:

1. IPOD Send Voice to EUT.

As the keyboard is strictly input device, no data is transmitted to (from) them during test. They are, however, continuously scanned for data input activity.

4.1.8 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	23° C	Relative Humidity :	44%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

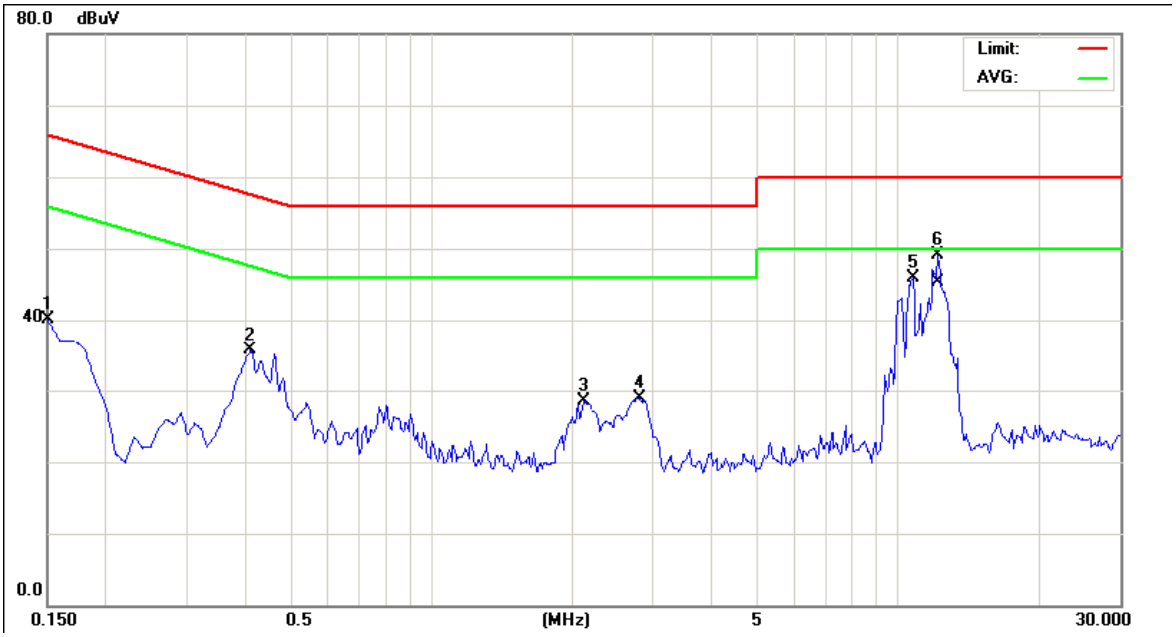
Freq.	Terminal	Measured(dBuV)		Limits(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	
0.15	Line	40.10	*	66.00	56.00	-25.90	(QP)
0.41	Line	35.72	*	57.65	47.65	-21.93	(QP)
2.12	Line	28.54	*	56.00	46.00	-27.46	(QP)
2.80	Line	28.96	*	56.00	46.00	-27.04	(QP)
10.79	Line	46.00	*	60.00	50.00	-14.00	(QP)
12.20	Line	49.05	45.29	60.00	50.00	-4.71	(AV)

Remark:

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz；SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz。Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz。

(2) All readings are QP Mode value unless otherwise stated AVG in column of「Note」. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(3) Measuring frequency range from 150KHz to 30MHz。



E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	23° C	Relative Humidity :	44%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

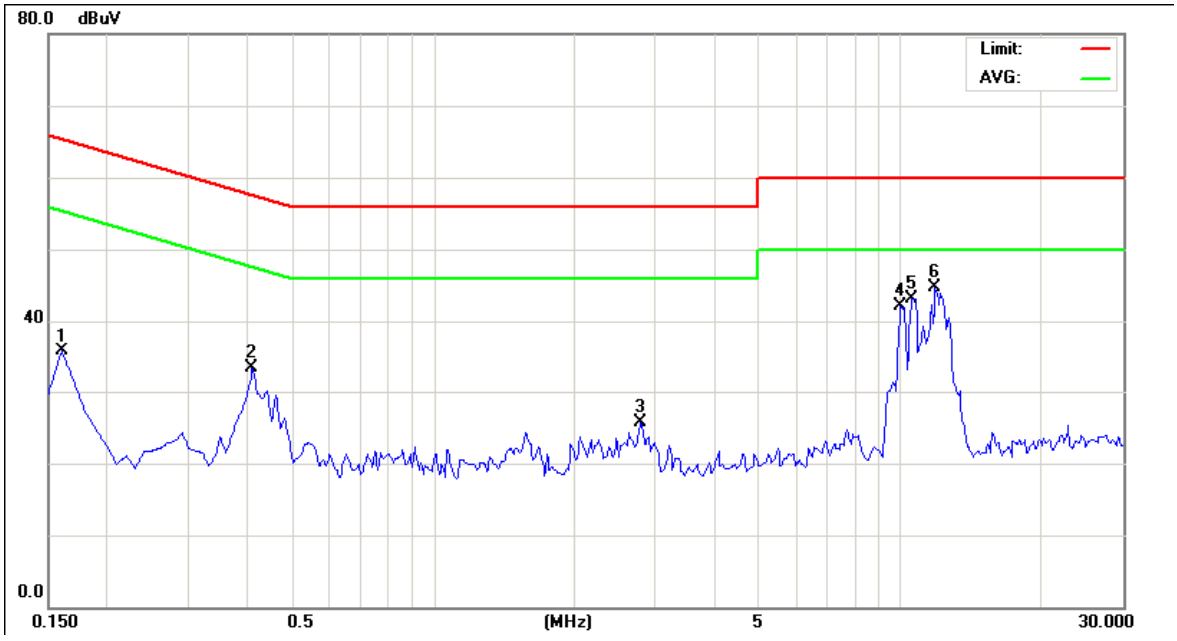
Freq.	Terminal	Measured(dBuV)		Limits(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	
0.16	Neutral	35.72	*	65.46	55.46	-29.74	(QP)
0.41	Neutral	33.26	*	57.65	47.65	-24.39	(QP)
2.78	Neutral	25.61	*	56.00	46.00	-30.39	(QP)
10.06	Neutral	42.01	*	60.00	50.00	-17.99	(QP)
10.61	Neutral	43.08	*	60.00	50.00	-16.92	(QP)
11.89	Neutral	44.79	*	60.00	50.00	-15.21	(QP)

Remark:

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz；SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz。Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.3 sec./MHz。

(2) All readings are QP Mode value unless otherwise stated AVG in column of「Note」. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(3) Measuring frequency range from 150KHz to 30MHz。



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 – 1000	47	37

Notes:

(1) The limit for radiated test was performed according to as following: CISPR 22/ FCC PART 15B /ICES-003.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (ABOVE 1000MHZ)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
1000-3000	76	50	70	50
3000-6000	80	60	74	54

Notes:

(1) The lower limit applies at the transition frequency.

FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 6 GHz, whichever is lower

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Absorbing Clamp	R&S	MDS-21	841077/011	Aug.18.2010
2	Test Cable	N/A	C-04_Clamp	N/A	Jul.09.2010
3	EMI TEST RECEIVER	R&S	ESCS30	826547/022	Jun.02.2010
4	Spectrum	ADVANTEST	R3162	81700032	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

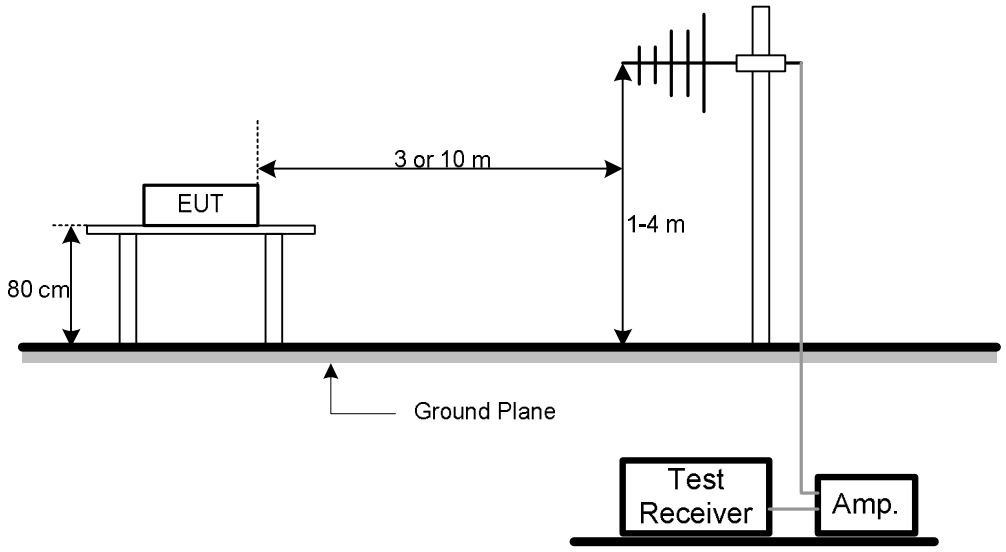
4.2.3 TEST PROCEDURE

a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 3.3).

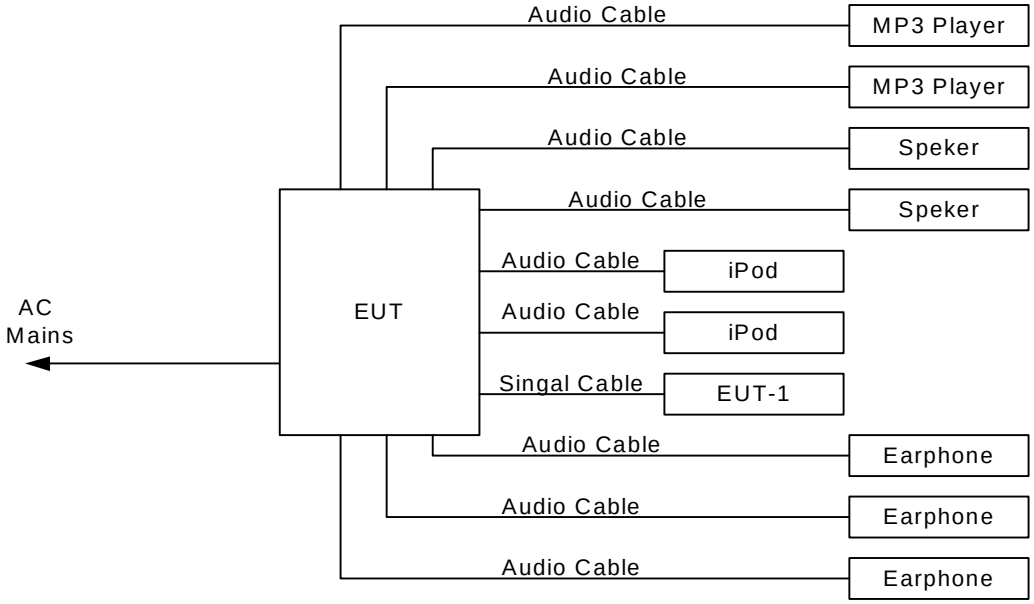
4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



4.2.6 BLOCK DIAGRAM OF TEST SETUP



4.2.7 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.7** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.7 TEST RESULTS

EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	AC POWER CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
33.38	39.15	23.70	2.60	41.75	26.30	45.13	35.13	- 3.38	
44.18	30.73	0.00	- 0.20	30.53	-0.20	45.52	35.52	-14.99	
69.15	26.95	0.00	1.22	28.17	1.22	46.45	36.45	-18.28	
75.90	31.27	0.00	1.36	32.63	1.36	46.70	36.70	-14.07	
81.30	30.36	0.00	0.57	30.93	0.57	46.90	36.90	-15.97	
100.88	25.36	0.00	0.74	26.10	0.74	47.63	37.63	-21.53	

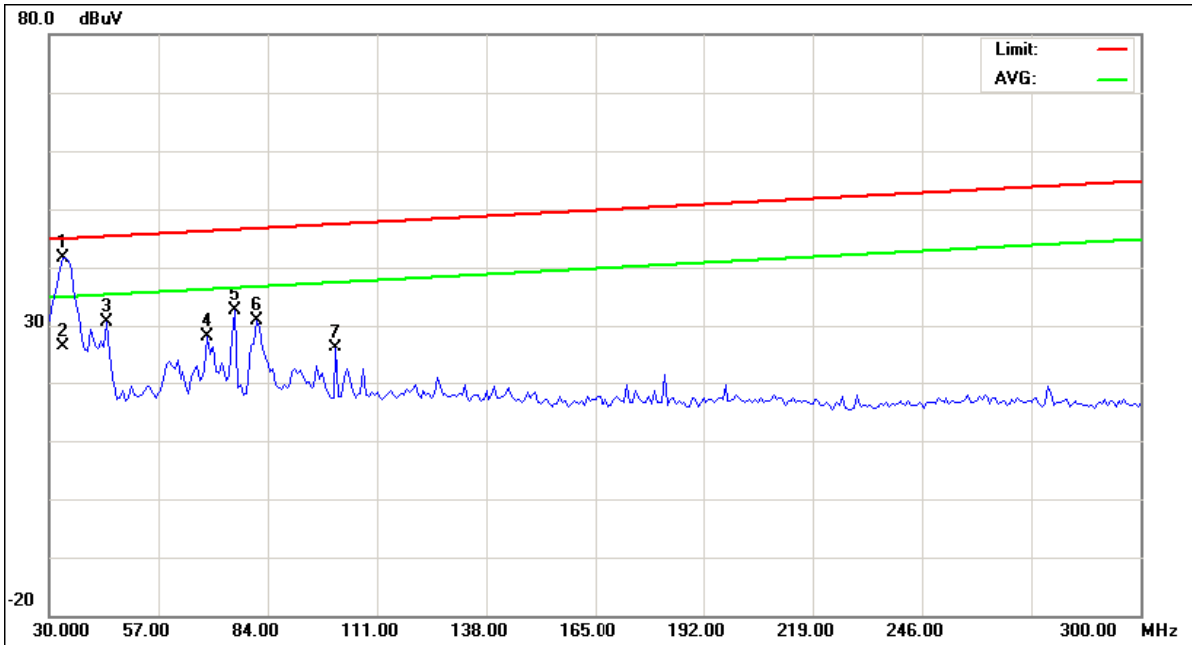
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	RETURN POWER CABLE(LOOP1)		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	24.73	0.00	3.27	28.00	3.27	45.20	35.20	-17.20	
75.90	32.08	0.00	1.36	33.44	1.36	46.70	36.70	-13.26	
81.98	27.58	0.00	0.54	28.12	0.54	46.93	36.93	-18.81	
92.78	26.01	0.00	0.35	26.36	0.35	47.33	37.33	-20.97	
100.88	26.42	0.00	0.74	27.16	0.74	47.63	37.63	-20.47	
126.53	23.80	0.00	1.53	25.33	1.53	48.58	38.58	-23.25	

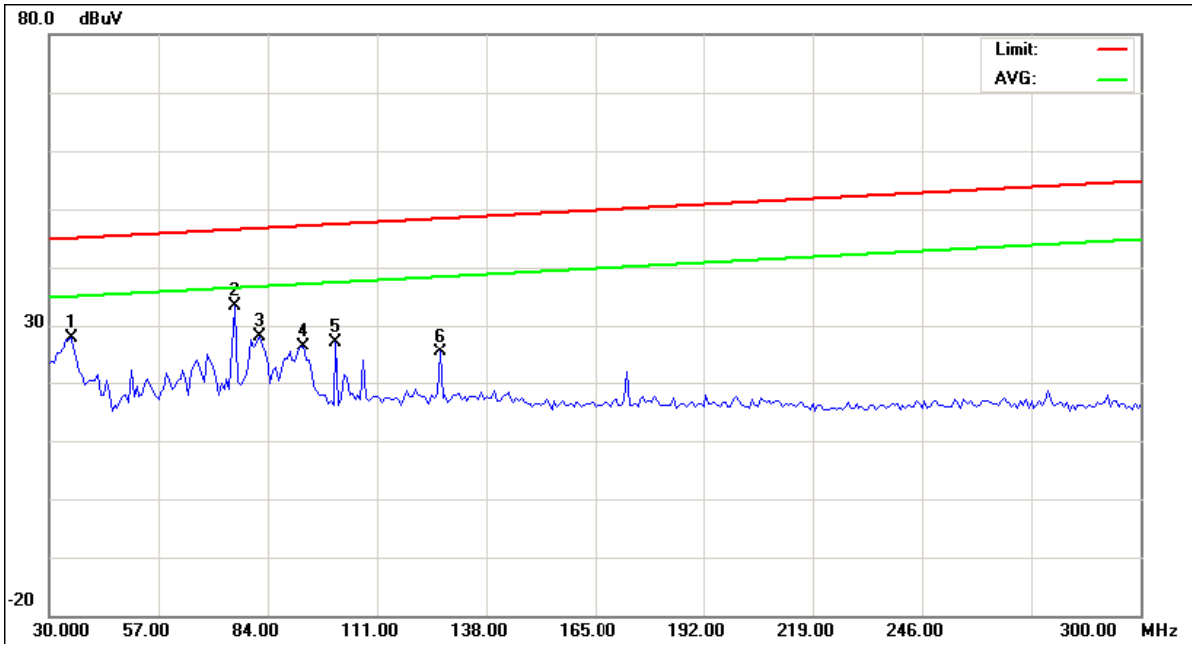
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	RETURN POWER CABLE(LOOP2)		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	25.39	0.00	3.27	28.66	3.27	45.20	35.20	-16.54	
59.70	25.89	0.00	1.09	26.98	1.09	46.70	36.70	-19.72	
75.90	28.72	0.00	1.36	30.08	1.36	46.70	36.70	-16.62	
81.98	26.81	0.00	0.54	27.35	0.54	46.93	36.93	-19.58	
90.08	24.08	0.00	0.33	24.41	0.33	47.23	37.23	-22.82	
100.88	26.39	0.00	0.74	27.13	0.74	47.63	37.63	-20.50	

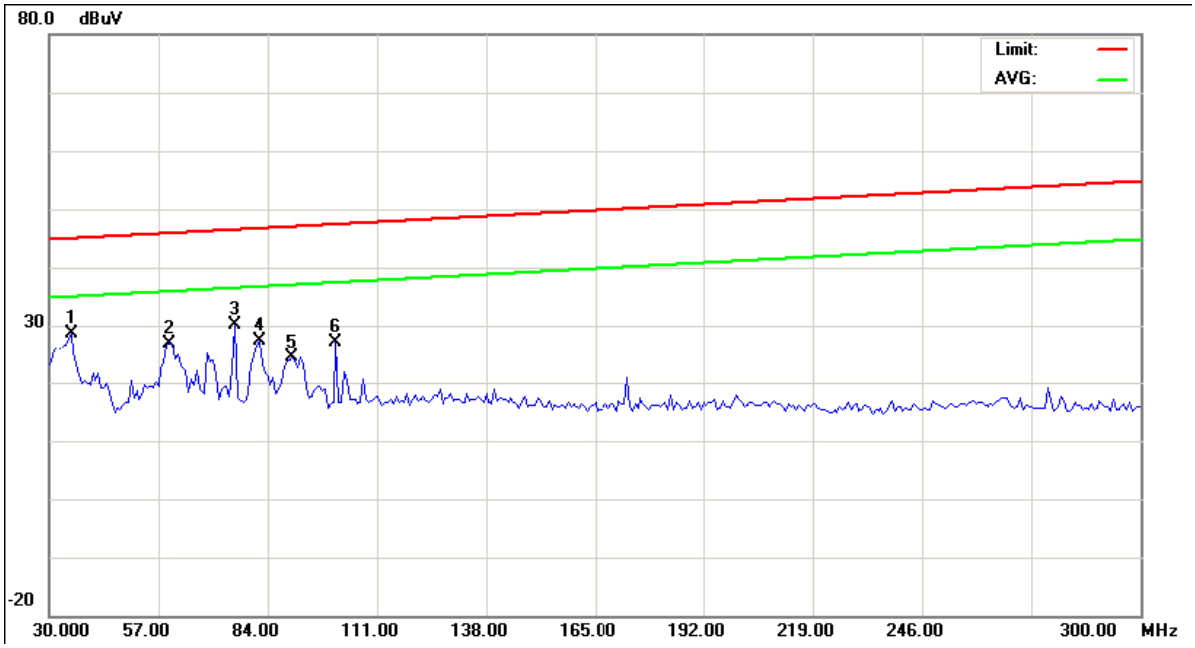
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	SEND POWER CABLE(LOOP1)		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	24.71	0.00	3.27	27.98	3.27	45.20	35.20	-17.22	
63.08	26.26	0.00	0.08	26.34	0.08	46.23	36.23	-19.89	
75.90	32.24	0.00	1.36	33.60	1.36	46.70	36.70	-13.10	
79.95	25.90	0.00	0.65	26.55	0.65	46.85	36.85	-20.30	
92.10	24.07	0.00	0.34	24.41	0.34	47.30	37.30	-22.89	
0.88	26.64	0.00	0.74	27.38	0.74	47.63	37.63	-20.25	

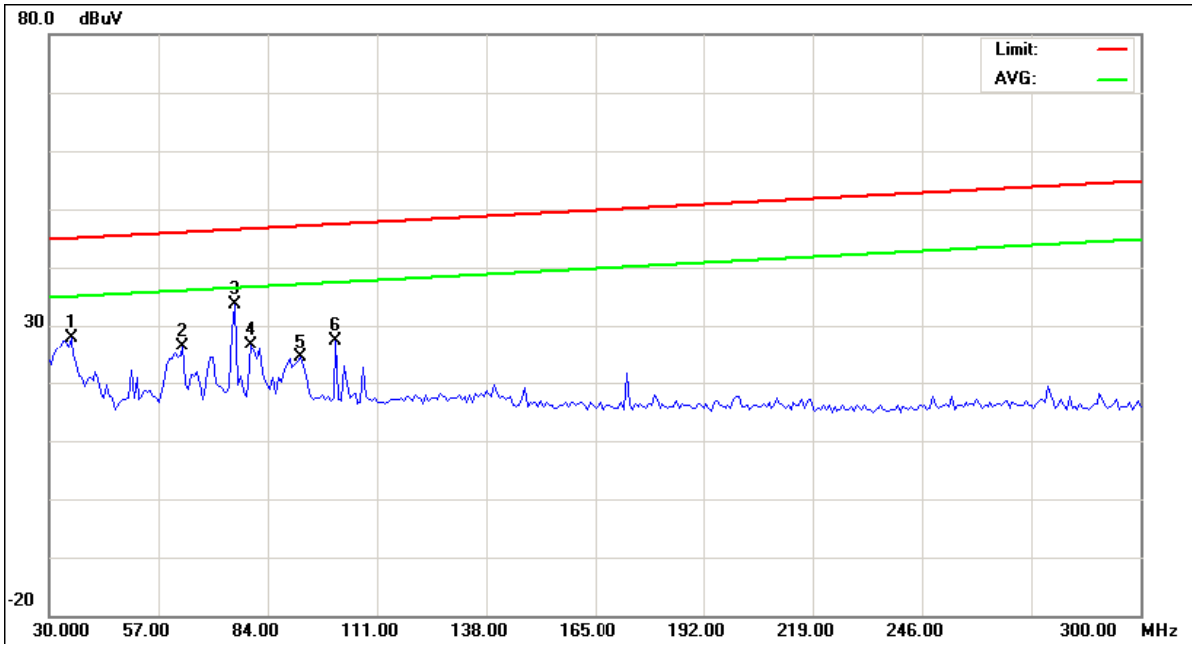
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	SEND POWER CABLE(LOOP2)		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
34.73	25.48	0.00	3.13	28.61	3.13	45.18	35.18	-16.57	
60.38	26.30	0.00	0.93	27.23	0.93	46.13	36.13	-18.90	
75.90	28.93	0.00	1.36	30.29	1.36	46.70	36.70	-16.41	
81.30	34.43	0.00	0.57	25.00	0.57	46.90	36.90	-21.90	
90.08	22.78	0.00	0.33	23.11	0.33	47.23	37.23	-24.12	
100.88	27.40	0.00	0.74	28.14	0.74	47.63	37.63	-19.49	

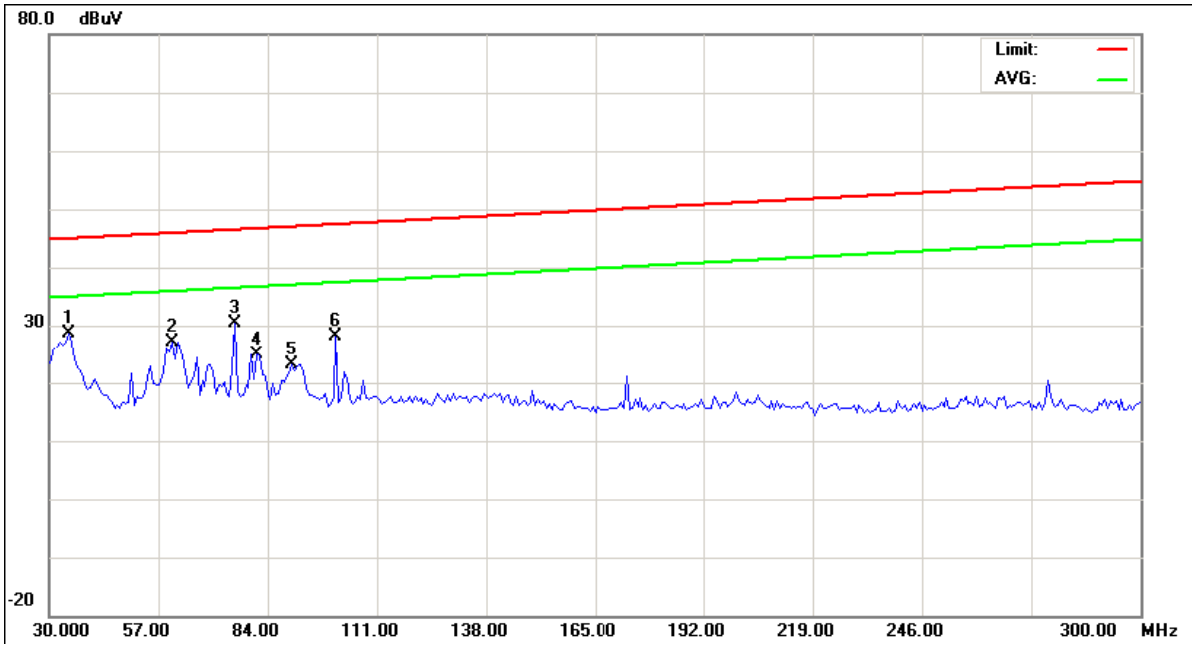
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	23℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	LINE OUT CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
34.73	24.62	0.00	3.13	27.75	3.13	45.18	35.18	-17.43	
60.38	27.88	0.00	0.93	28.81	0.93	46.13	36.13	-17.32	
75.90	29.86	0.00	1.36	31.22	1.36	46.70	36.70	-15.48	
81.98	26.89	0.00	0.54	27.43	0.54	46.93	36.93	-19.50	
92.10	26.19	0.00	0.34	26.53	0.34	47.30	37.30	-20.77	
100.88	29.88	0.00	0.74	30.62	0.74	47.63	37.63	-17.01	

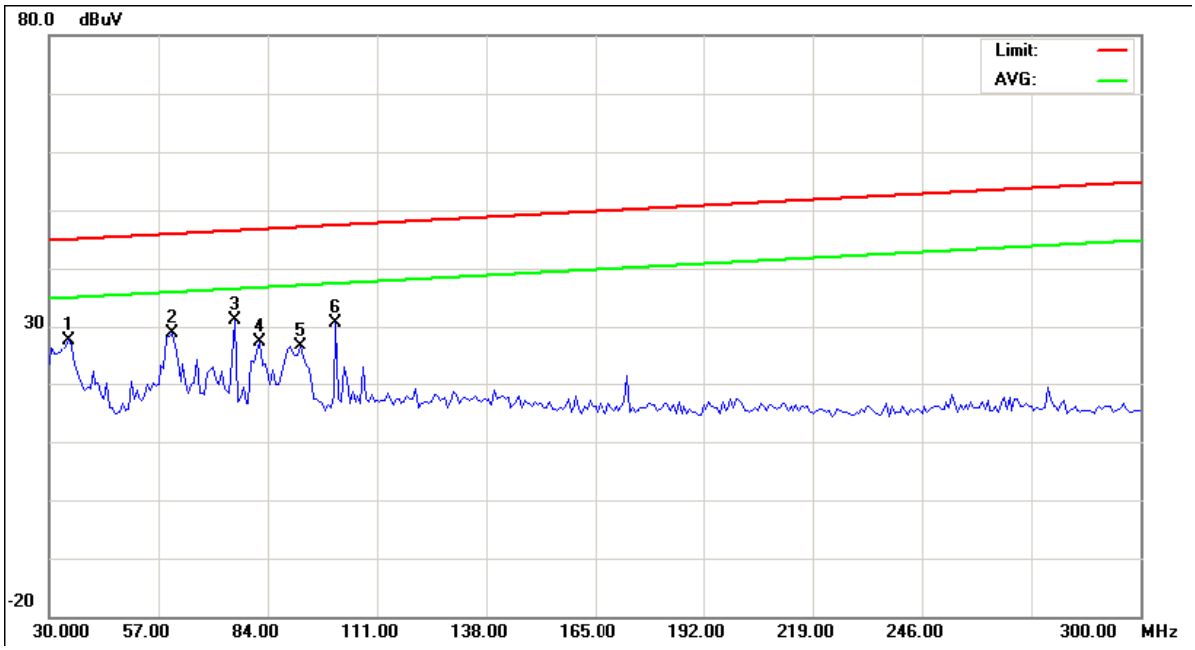
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	SPEAKER OUT 1 CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	24.34	0.00	3.27	27.61	3.27	45.20	35.20	-17.59	
59.70	26.56	0.00	1.09	27.65	1.09	46.10	36.10	-18.45	
75.90	32.62	0.00	1.36	33.98	1.36	46.70	36.70	-12.72	
82.65	26.28	0.00	0.50	26.78	0.50	46.95	36.95	-20.17	
92.10	24.65	0.00	0.34	24.99	0.34	47.30	37.30	-22.31	
100.88	29.18	0.00	0.74	29.92	0.74	47.63	37.63	-17.71	

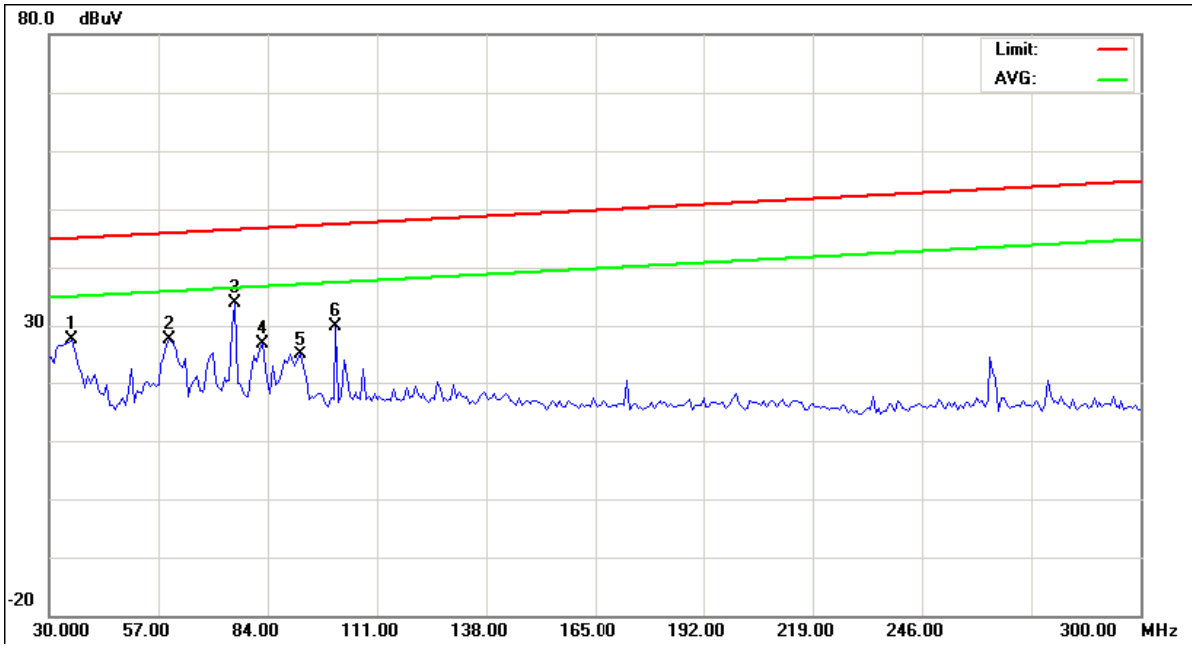
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	SPEAKER OUT 2 CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	26.55	0.00	3.27	29.82	3.27	45.20	35.20	-15.38	
59.70	27.34	0.00	1.09	28.43	1.09	46.10	36.10	-17.67	
75.90	33.50	23.90	1.36	34.86	25.26	46.70	36.70	-11.44	(AV)
81.98	26.66	0.00	0.54	27.20	0.54	46.93	36.93	-19.73	
92.10	26.05	0.00	0.34	26.39	0.34	47.30	37.30	-20.91	
100.88	28.44	0.00	0.74	29.18	0.74	47.63	37.63	-18.45	

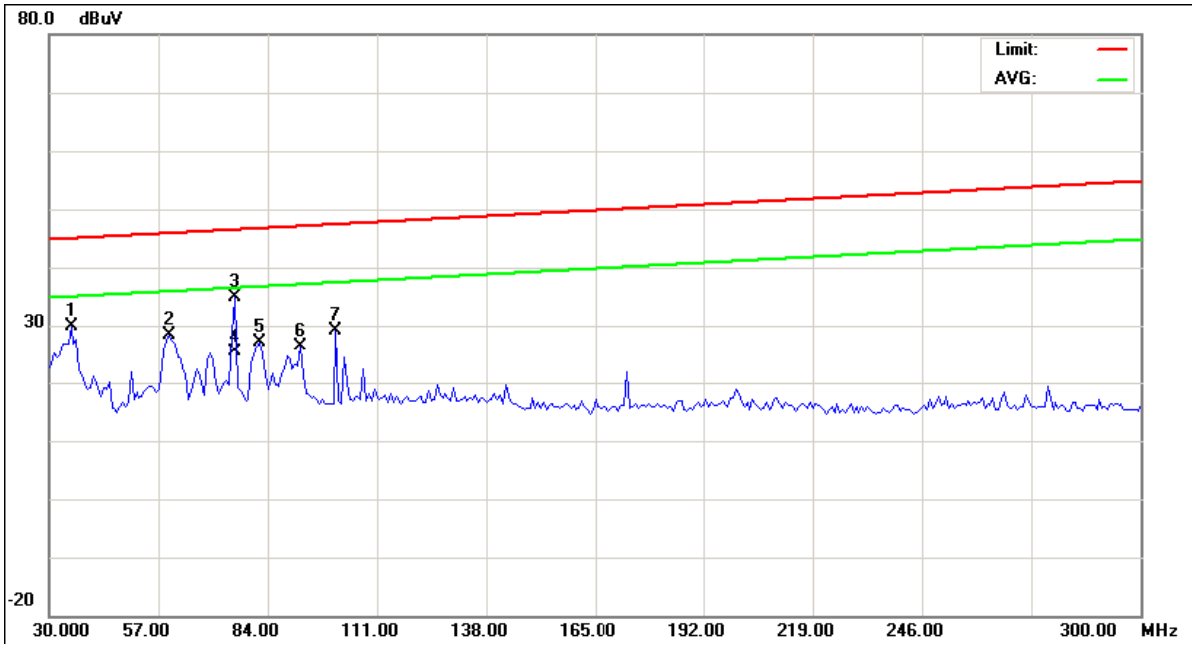
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	REVERB CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
32.70	26.00	0.00	2.34	28.34	2.34	45.10	35.10	-16.76	
62.40	29.43	0.00	0.29	29.72	0.29	46.20	36.20	-16.48	
70.50	25.22	0.00	1.57	26.79	1.57	46.50	36.50	-19.71	
75.90	32.43	0.00	1.36	33.79	1.36	46.70	36.70	-12.91	
81.30	24.93	0.00	0.57	25.50	0.57	46.90	36.90	-21.40	
100.88	28.12	0.00	0.74	28.86	0.74	47.63	37.63	-18.77	

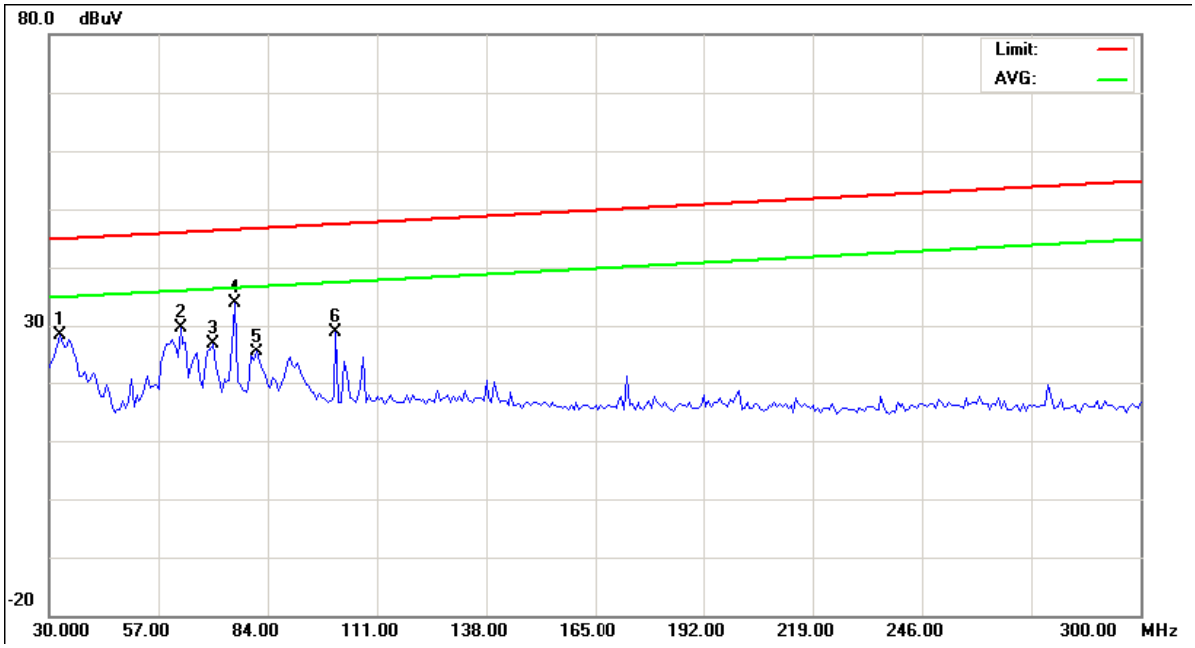
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	CHANNEL CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
34.73	26.85	0.00	3.13	29.98	3.13	45.18	35.18	-15.20	
40.80	27.39	0.00	3.02	30.41	3.02	45.40	35.40	-14.99	
59.70	22.88	0.00	1.09	23.97	1.09	46.10	36.10	-22.13	
75.90	27.68	0.00	1.36	29.04	1.36	46.70	36.70	-17.66	
90.08	24.24	0.00	0.33	24.57	0.33	47.23	37.23	-22.66	
100.88	31.48	0.00	0.74	32.22	0.74	47.63	37.63	-15.41	

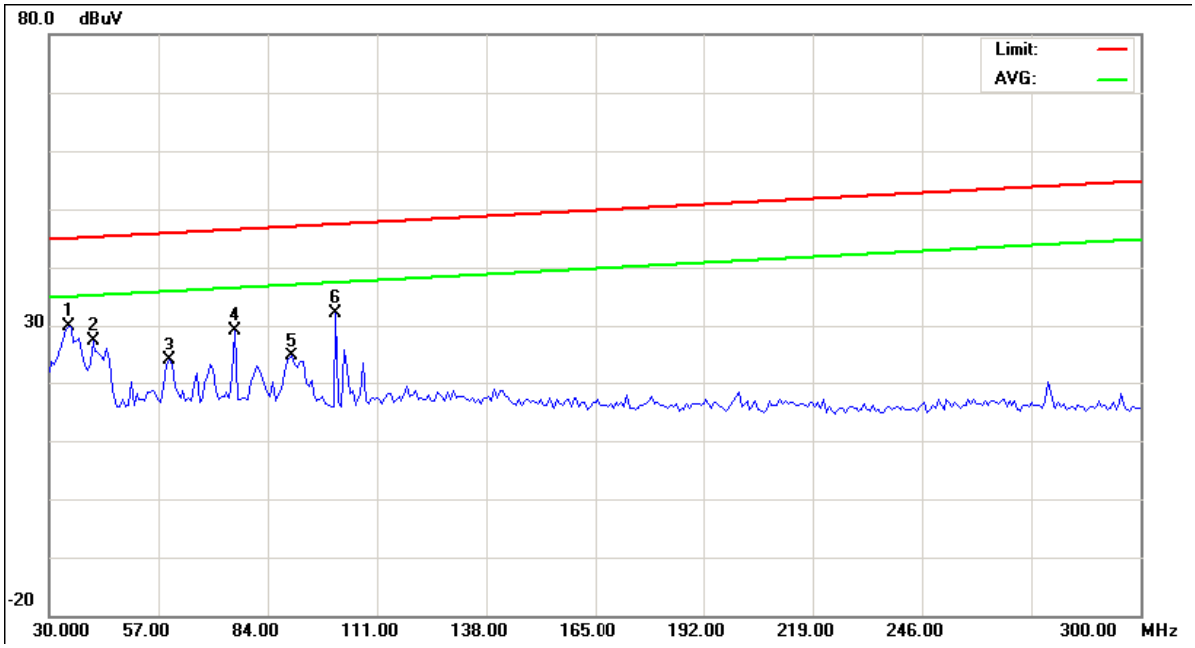
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
35.40	28.46	0.00	3.27	31.73	3.27	45.20	35.20	-13.47	
60.38	22.85	0.00	0.93	23.78	0.93	46.13	36.13	-22.35	
75.90	28.89	0.00	1.36	30.25	1.36	46.70	36.70	-16.45	
81.98	23.79	0.00	0.54	24.33	0.54	46.93	36.93	-22.60	
92.10	24.81	0.00	0.34	25.15	0.34	47.30	37.30	-22.15	
100.88	27.34	0.00	0.74	28.08	0.74	47.63	37.63	-19.55	

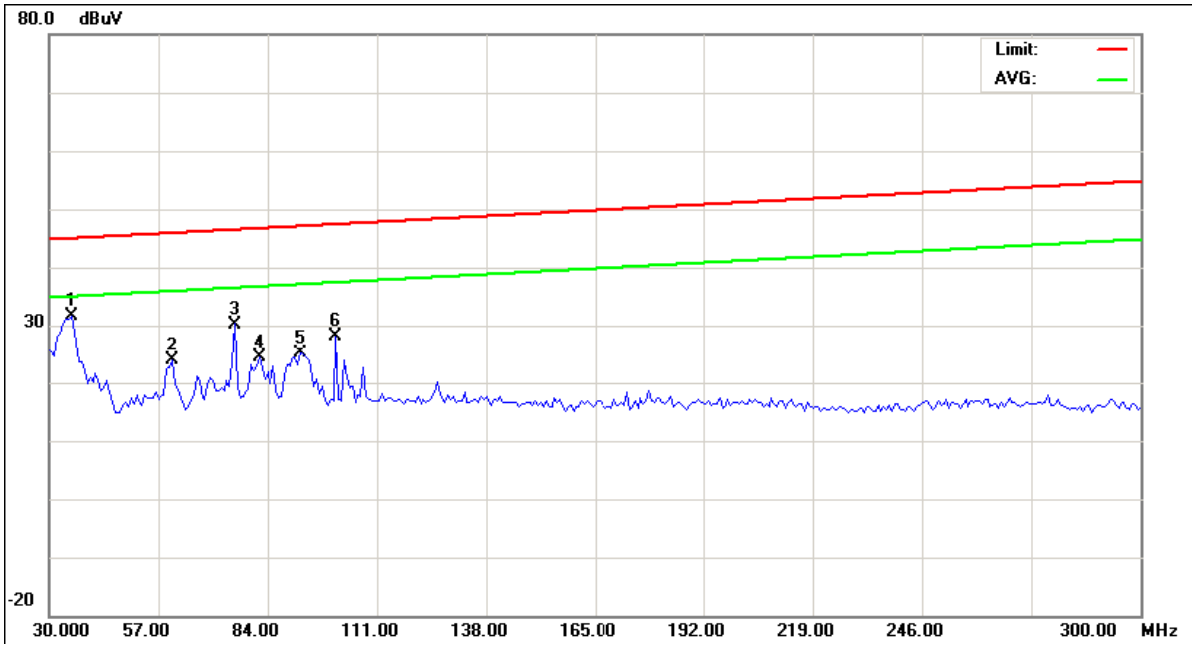
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT:	Guitar Amplifier	Model Name :	D100
Temperature:	26℃	Relative Humidity:	50%
Pressure:	1004 hPa	Test Power :	AC 230V/50Hz
Test Mode :	HIGH LEVEL IN CABLE		

Freq.	Read(RA)(dBuV)		Factor(CF)	Measured(dBuV)		Limits(dBuV)		Safe Margins	
(MHz)	QP	AV	(dB)	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
32.70	27.32	0.00	2.34	29.66	2.34	45.10	35.10	-15.44	
35.40	26.70	0.00	3.27	29.97	3.27	45.20	35.20	-15.23	
75.90	28.82	0.00	1.36	30.18	1.36	46.70	36.70	-16.52	
92.10	24.80	0.00	0.34	25.14	0.34	47.30	37.30	-22.16	
100.88	27.39	0.00	0.74	28.13	0.74	47.63	37.63	-19.50	
107.63	22.04	0.00	1.32	23.36	1.32	47.88	37.88	-24.52	

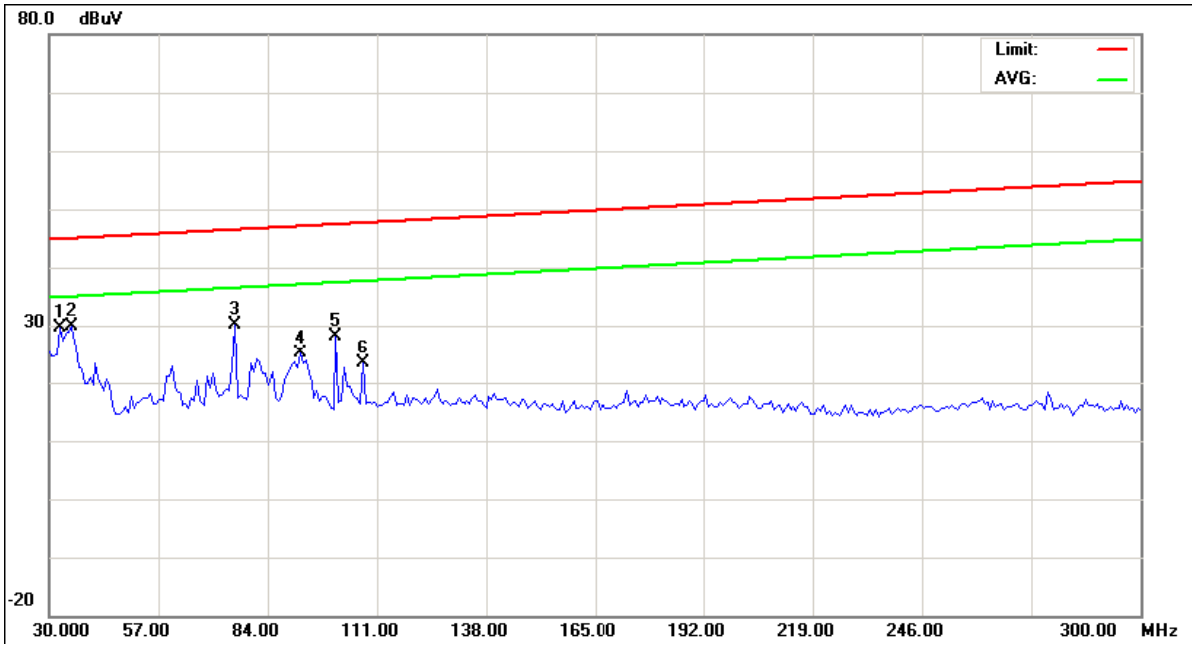
Remark:

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 300MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



4.3 SIGNAL, CONTROL AND DC POWER PORT EMISSIONS TESTING

4.3.1 TEST SPECIFICATION

FREQUENCY (MHz)	E1 / E2 / E3 (dBuV)		E4 / E5 (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	50 – 40 *	40 – 30 *	63 - 53 *	53 - 43 *
0.50 -5.0	40.00	30.00	53.00	43.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.3.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Jun.01.2010
2	RF Current Probe	FCC	F-33-4	78	Jun.01.2010
3	Transient Limiter	Agilent	11947A	3107A03668	Jun.01.2010
4	Test Cable	N/A	C-06_C03	N/A	Nov.16.2010
5	Test Receiver	R&S	ESCI	100382	Jun.02.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

4.3.3 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

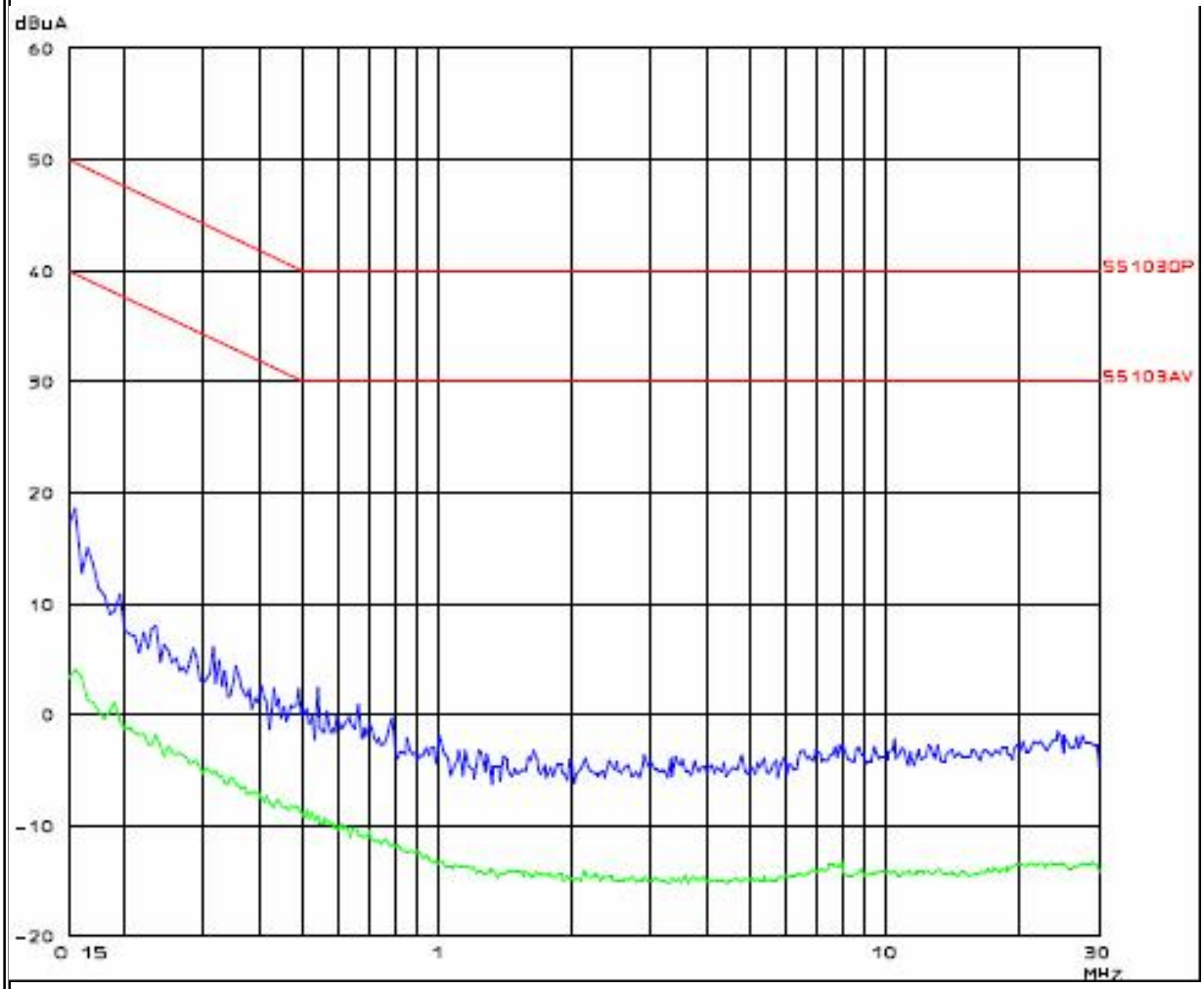
d. LISN at least 80 cm from nearest part of EUT chassis.

4.3.4 DEVIATION FROM TEST STANDARD

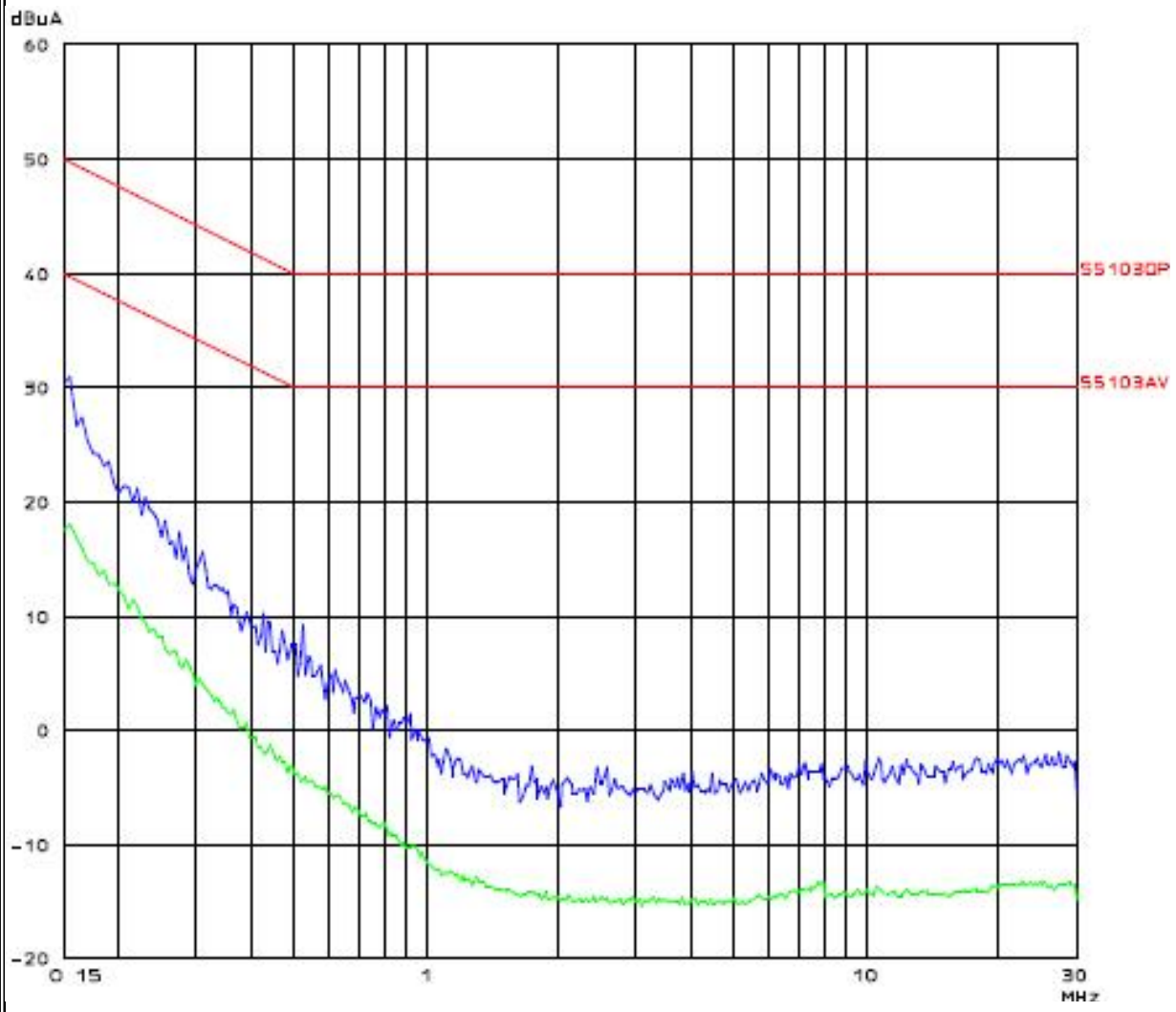
No deviation

4.3.5 TEST RESULTS

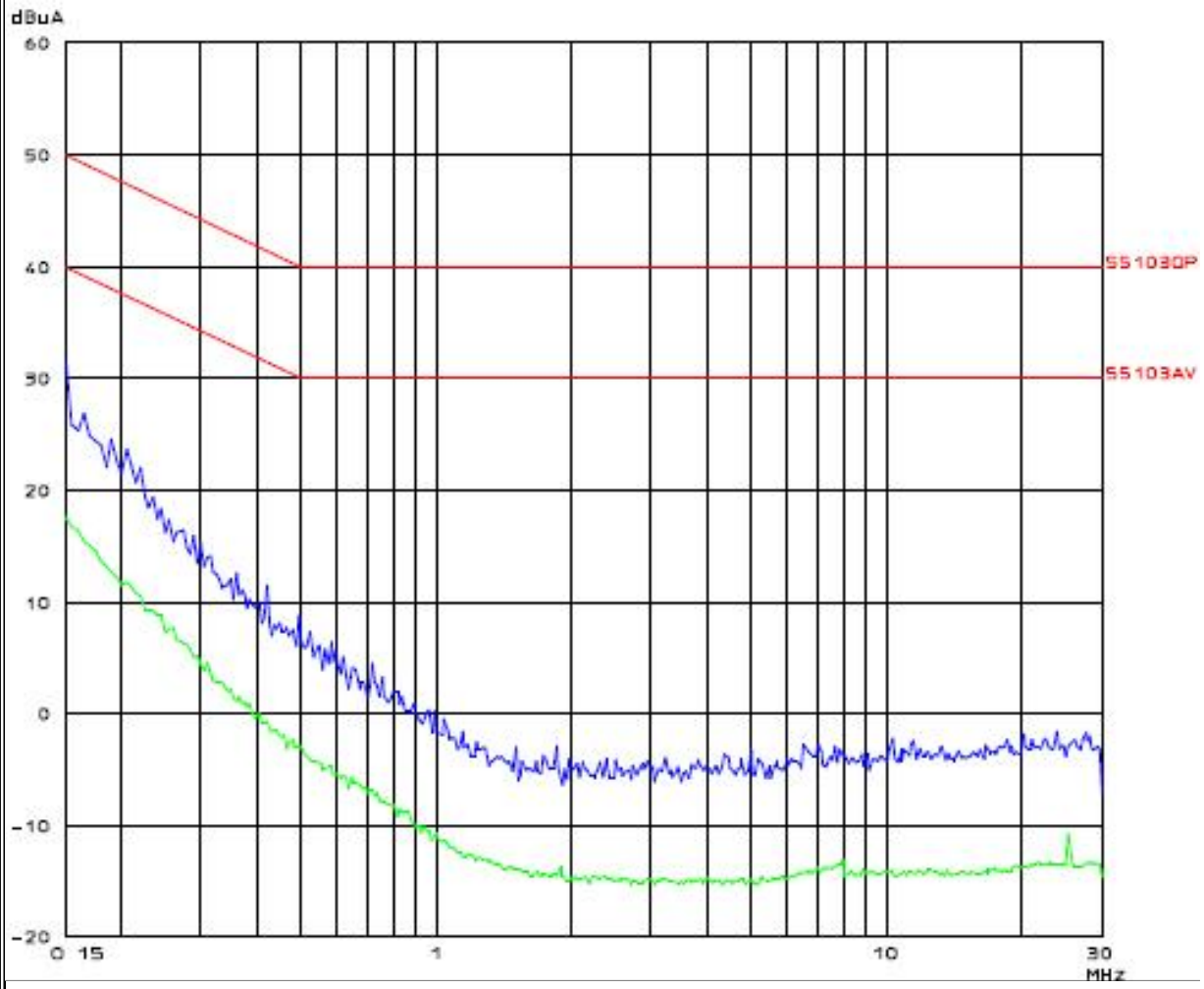
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN/Input 2		



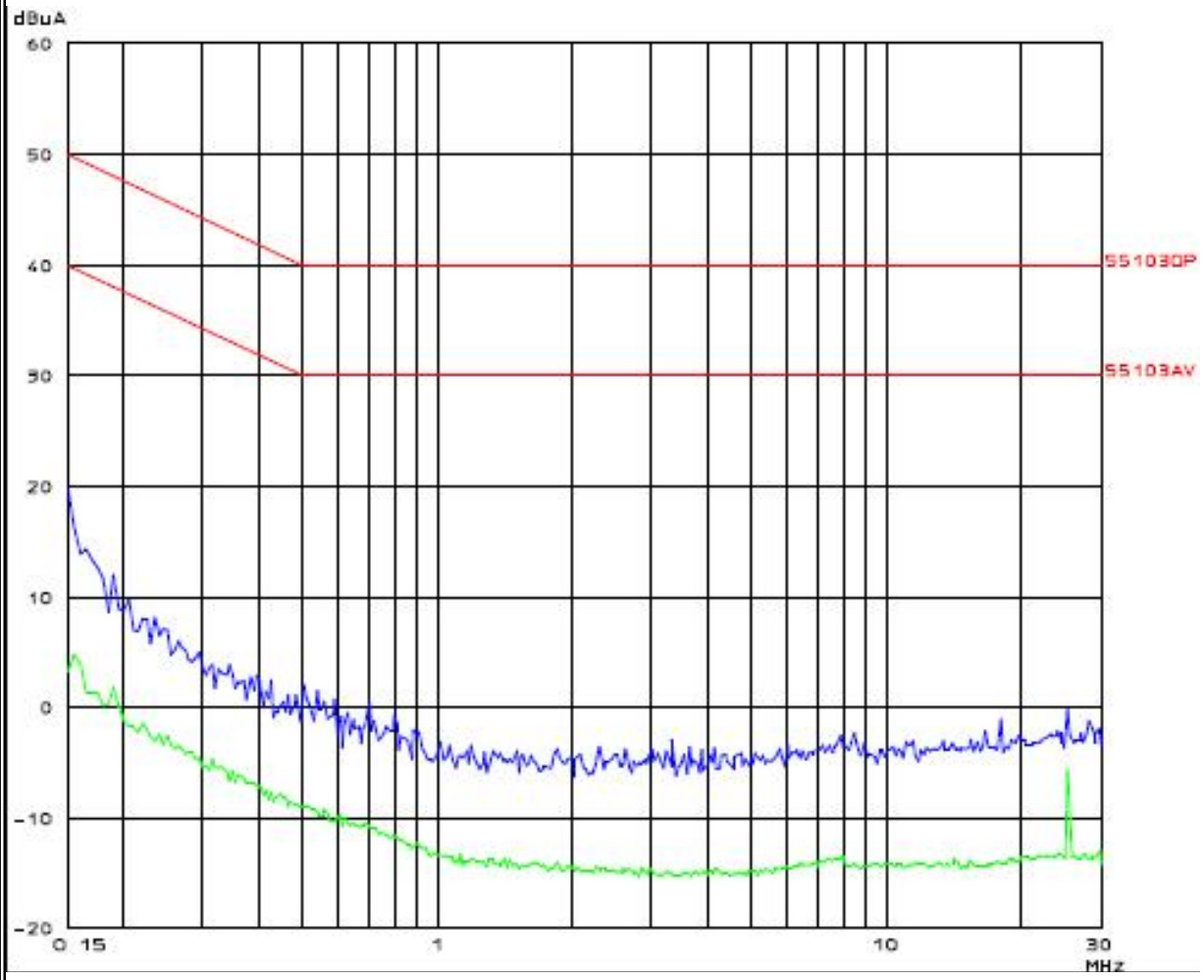
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN/Output 1		



E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN/Output		



E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN/C		



4.4 SIGNAL, CONTROL AND DC POWER PORT EMISSIONS TESTING

4.4.1 TEST SPECIFICATION

Magnetic Emissions	FREQUENCY	E1 / E2 / E3 / E4 (A/m)	E5 (A/m)
Rock mount	0.5Hz – 500Hz	4 - 0.4	No limit
	500Hz – 50KHz	0.4	
Non-Rock mount	0.5Hz – 500Hz	1 - 0.01	
	500Hz – 50KHz	0.01	

4.4.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Audio Analyzer	Audio Precision	SYS-2222	000274	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

4.4.3 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

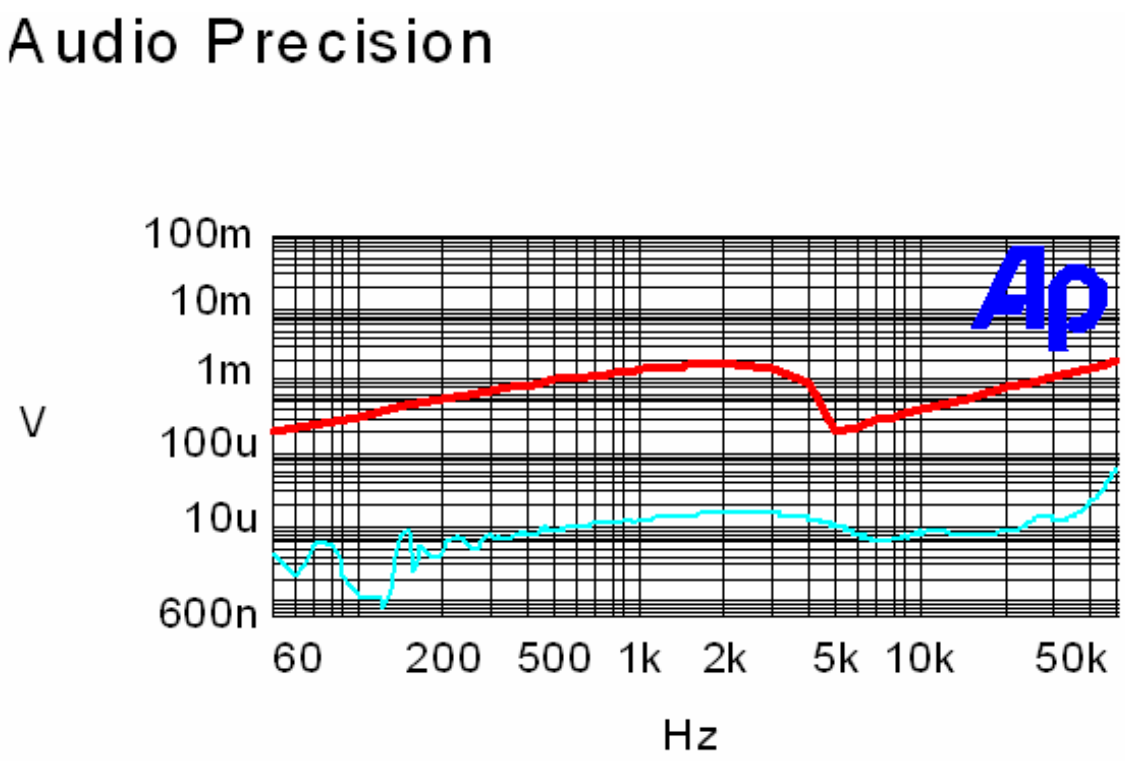
a. Audio apparatus shall be fed from a pink noise source; video apparatus shall be fed from a source of 100.0.75.0 color bars.
b. Verify that the environmental fields do not exceed one quarter of the limits shown in table 2.
c. For apparatus intended for rack mounting; top, bottom and side faces only are measured.
    1.Locate the loop sensor 10±0.5cm from the top, bottom or side of the apparatus under test. Orient the plane of the loop sensor parallel to the surface.
    2.Monitor the output of the spectrum analyzer while moving the loop sensor over the face of the apparatus under test. Note the positions and frequencies of maximum radiation.
    3.Record the positions and frequency of any emissions exceeding the limit specified in table 2.
d. For apparatus not intended for rack mounting; all faces are measured.
    1. Locate the loop sensor 1±0.05cm from the face under test of the apparatus. Orient the plane of the loop sensor parallel to the surface.
    2.Monitor the output of the spectrum analyzer while moving the loop sensor over the face of the apparatus under test. Note the positions and frequencies of maximum radiation.
    3.Record the positions and frequency of any emissions exceeding the limit specified in table 2.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST RESULTS

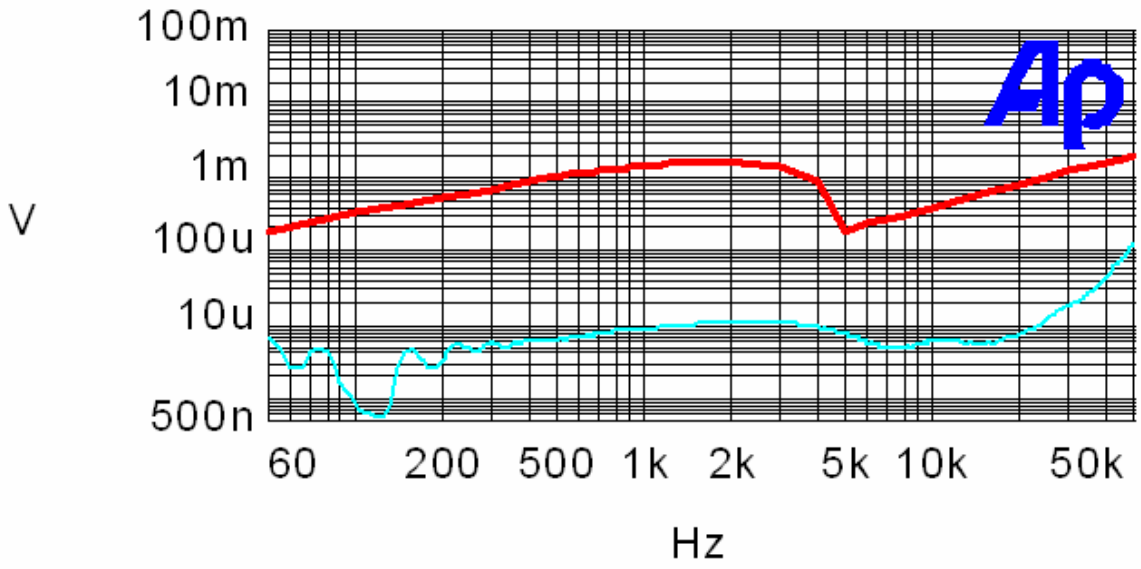
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / Front		



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / Back		

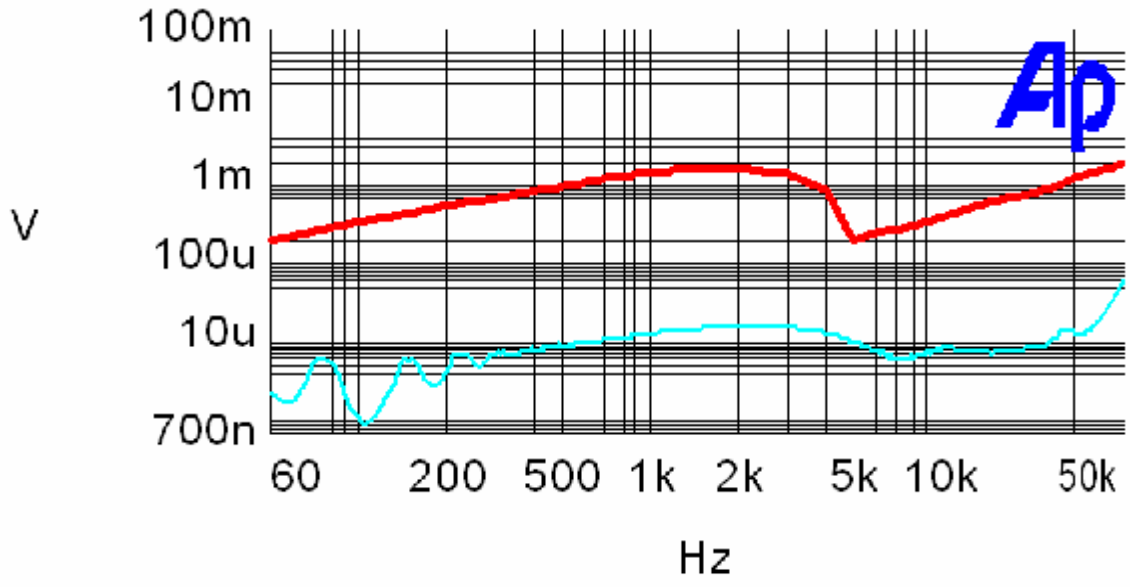
Audio Precision



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / Left		

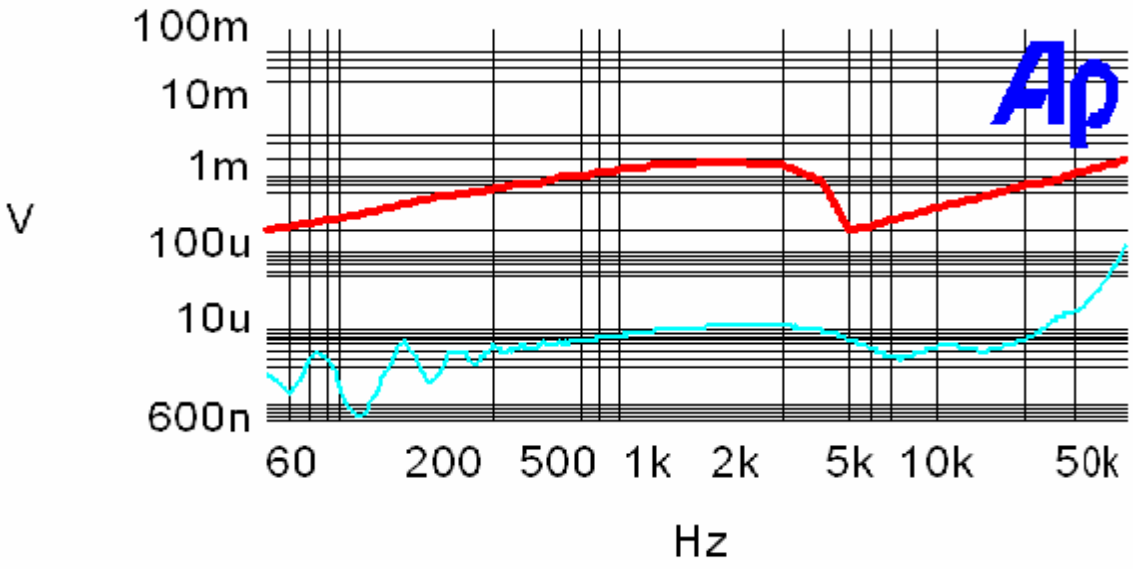
Audio Precision



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / Right		

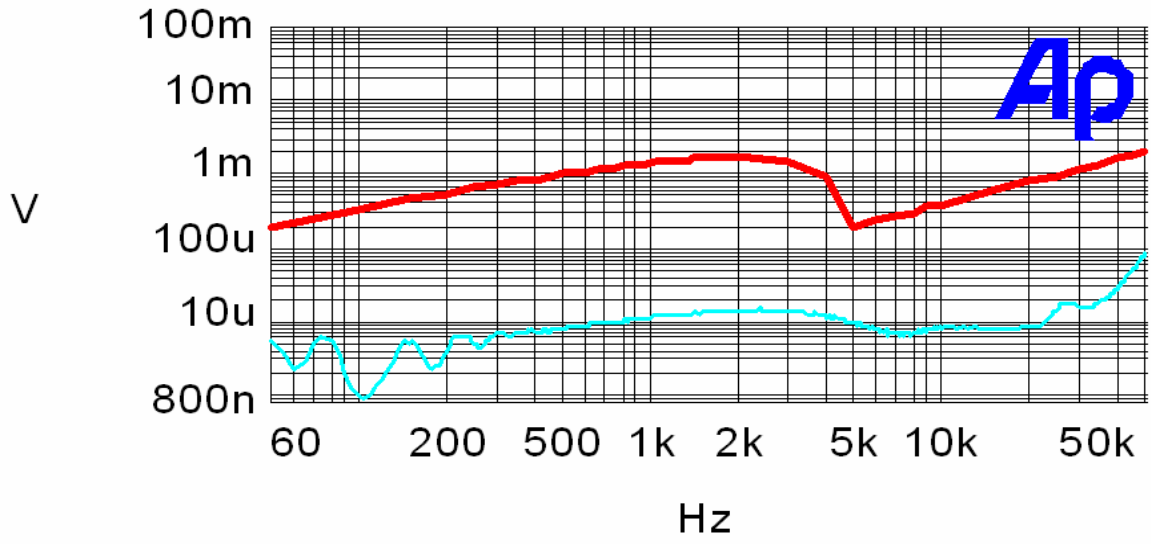
Audio Precision



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / Top		

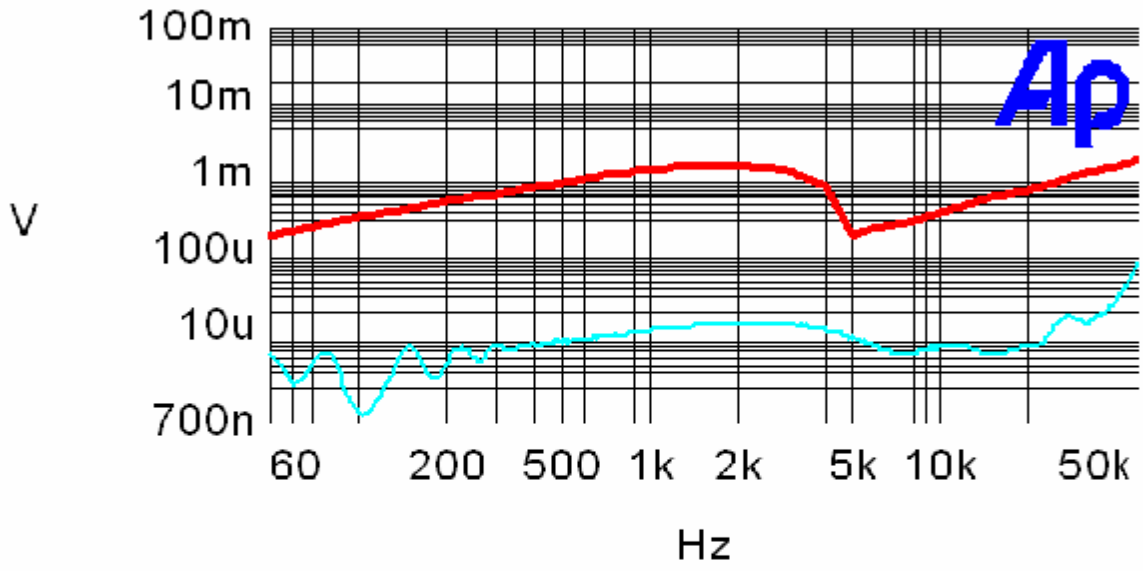
Audio Precision



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN / But		

Audio Precision



Color	Line Style	Thick
Cyan	Solid	1
Red	Solid	2

4.5 HARMONICS CURRENT MEASUREMENT

4.5.1 LIMITS OF HARMONICS CURRENT MEASUREMENT

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. permissible harmonic current (in Ampers)	Equipment Category	Harmonic Order n	Max. permissible harmonic current (in Ampers)
	odd harmonics			odd harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
Non	9	0.40	Guitar Amplifier	9	0.30
Portable	11	0.33	Receivers	11	0.17
Tools	13	0.21		13	0.12
or	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
Guitar Amplifier	even harmonics			even harmonics	
Receivers	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
	8≤n≤40	0.23 · 8/n		DC	0.05

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. permissible harmonic current (in Ampers)	Equipment Category	Harmonic Order n	Max. permissible harmonic current (in A)	(mA/w)
			3	2.30	3.4
	Same as Limits		5	1.14	1.9
Class A	Specified in	Class D	7	0.77	1.0
	4-2.1, Table - I,		9	0.40	0.5
	but only odd		11	0.33	0.35
	harmonics required		13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

4.5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonic & Flicker	California	PACS-1	72344	Jun.01.2010
2	Power Source	California	3001iX	56309	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

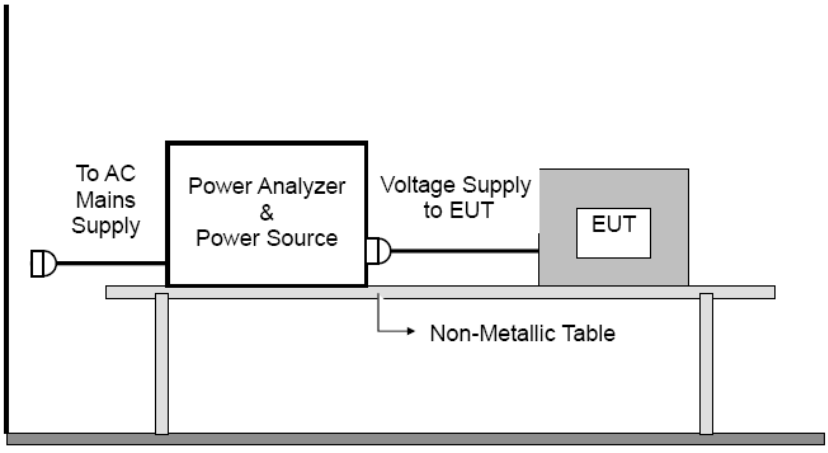
4.5.3 TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
b. The classification of EUT is according to section 5 of EN 61000-3-2: 2006.The EUT is classified as follows:
   Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
   Class B: Portable tools. Portable tools. Arc welding equipment which is not professional equipment.
   Class C: Lighting equipment.
   Class D: Equipment having a specified power less than or equal to600 W of the following types: Personal computers and personal computer monitors and television receivers.
c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.
d. For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 3.3)

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



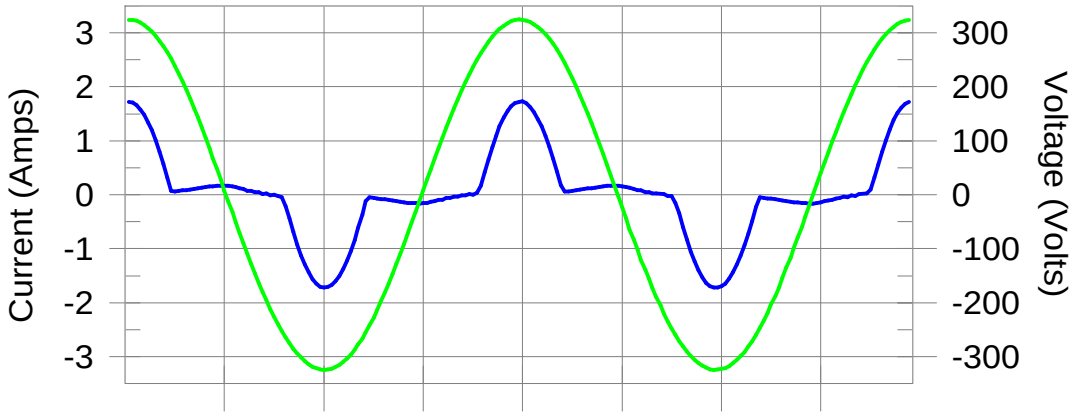
4.5.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.7** Unless otherwise a special operating condition is specified in the follows during the testing.

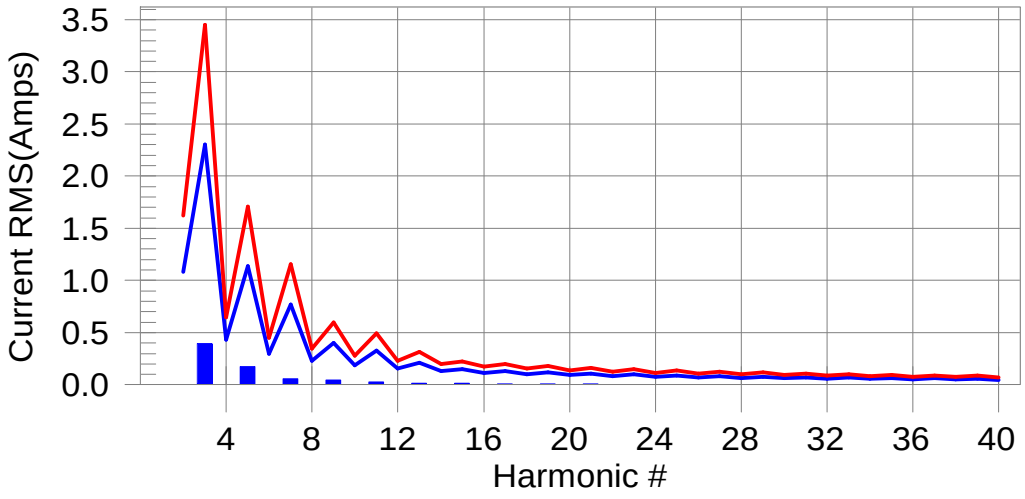
4.5.7 TEST RESULTS

Harmonics – Class-A per Ed. 2.1(Run time)			
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	58%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Current & voltage waveforms



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



Test result: Pass Worst harmonic was #15 with 14.35% of the limit.

Current Test Result Summary (Run time)			
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	58%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Highest parameter values during test:			
V_RMS (Volts):	229.6458	Frequency(Hz):	50.00
I_Peak (Amps):	1.735	I_RMS (Amps):	0.807
I_Fund (Amps):	0.603	Crest Factor:	2.710
Power (Watts):	137.4	Power Factor:	0.815
Test Mode :	LOW LEVEL IN		

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.002	1.620	0.14	Pass
3	0.210	2.300	9.1	0.393	3.450	11.39	Pass
4	0.001	0.430	0.0	0.002	0.645	0.25	Pass
5	0.141	1.140	12.4	0.176	1.710	10.29	Pass
6	0.001	0.300	0.0	0.001	0.450	0.20	Pass
7	0.057	0.770	7.4	0.060	1.155	5.16	Pass
8	0.000	0.230	0.0	0.001	0.345	0.22	Pass
9	0.008	0.400	2.1	0.045	0.600	7.47	Pass
10	0.000	0.184	0.0	0.000	0.276	0.16	Pass
11	0.018	0.330	5.6	0.026	0.495	5.34	Pass
12	0.000	0.153	0.0	0.000	0.230	0.21	Pass
13	0.016	0.210	7.8	0.017	0.315	5.39	Pass
14	0.000	0.131	0.0	0.000	0.197	0.21	Pass
15	0.005	0.150	3.7	0.016	0.225	6.92	Pass
16	0.000	0.115	0.0	0.000	0.173	0.23	Pass
17	0.005	0.132	4.1	0.008	0.199	4.22	Pass
18	0.000	0.102	0.0	0.001	0.153	0.59	Pass
19	0.007	0.118	6.0	0.009	0.178	4.80	Pass
20	0.000	0.092	0.0	0.001	0.138	0.83	Pass
21	0.003	0.107	4.6	0.006	0.161	3.60	Pass
22	0.000	0.084	0.0	0.001	0.125	0.73	Pass
23	0.003	0.098	0.0	0.004	0.147	3.01	Pass
24	0.000	0.077	0.0	0.000	0.115	0.36	Pass
25	0.004	0.090	0.0	0.005	0.135	3.45	Pass
26	0.000	0.071	0.0	0.000	0.106	0.29	Pass
27	0.002	0.083	0.0	0.003	0.125	2.42	Pass
28	0.000	0.066	0.0	0.000	0.099	0.37	Pass
29	0.002	0.078	0.0	0.003	0.116	2.88	Pass
30	0.000	0.061	0.0	0.000	0.092	0.32	Pass
31	0.002	0.073	0.0	0.002	0.109	2.16	Pass
32	0.000	0.058	0.0	0.000	0.086	0.37	Pass
33	0.002	0.068	0.0	0.002	0.102	2.22	Pass
34	0.000	0.054	0.0	0.000	0.081	0.32	Pass
35	0.001	0.064	0.0	0.002	0.096	2.11	Pass
36	0.000	0.051	0.0	0.000	0.077	0.46	Pass
37	0.002	0.061	0.0	0.002	0.091	1.79	Pass
38	0.000	0.048	0.0	0.000	0.073	0.37	Pass
39	0.001	0.058	0.0	0.002	0.087	2.12	Pass
40	0.000	0.046	0.0	0.000	0.069	0.33	Pass

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits.

Voltage Source Verification Data (Run time)			
E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	58%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Highest parameter values during test:			
V_RMS (Volts):	229.6458	Frequency(Hz):	50.00
I_Peak (Amps):	1.735	I_RMS (Amps):	0.807
I_Fund (Amps):	0.603	Crest Factor:	2.710
Power (Watts):	137.4	Power Factor:	0.815
Test Mode :	LOW LEVEL IN		

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.135	0.459	29.50	OK
3	0.527	2.066	25.51	OK
4	0.066	0.459	14.37	OK
5	0.036	0.918	3.96	OK
6	0.034	0.459	7.45	OK
7	0.056	0.689	8.10	OK
8	0.022	0.459	4.83	OK
9	0.055	0.459	11.93	OK
10	0.020	0.459	4.30	OK
11	0.017	0.230	7.32	OK
12	0.016	0.230	6.94	OK
13	0.018	0.230	7.79	OK
14	0.012	0.230	5.39	OK
15	0.012	0.230	5.24	OK
16	0.010	0.230	4.55	OK
17	0.011	0.230	4.72	OK
18	0.012	0.230	5.16	OK
19	0.012	0.230	5.03	OK
20	0.015	0.230	6.73	OK
21	0.010	0.230	4.49	OK
22	0.009	0.230	3.88	OK
23	0.006	0.230	2.81	OK
24	0.006	0.230	2.75	OK
25	0.009	0.230	4.07	OK
26	0.008	0.230	3.59	OK
27	0.008	0.230	3.64	OK
28	0.006	0.230	2.75	OK
29	0.007	0.230	3.24	OK
30	0.005	0.230	2.38	OK
31	0.005	0.230	2.36	OK
32	0.005	0.230	2.23	OK
33	0.008	0.230	3.54	OK
34	0.003	0.230	1.36	OK
35	0.004	0.230	1.88	OK
36	0.003	0.230	1.30	OK
37	0.006	0.230	2.66	OK
38	0.003	0.230	1.27	OK
39	0.006	0.230	2.48	OK
40	0.006	0.230	2.47	OK

4.6 VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

4.6.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKSMEASUREMENT

Tests	Limits		Descriptions
	IEC555-3	IEC 61000-3-3	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3 %	≤ 3 %	Relative Steady-State V-Chang
dmax	≤ 4 %	≤ 4 %	Maximum Relative V-change
d (t)	N/A	≤ 3% for > 200 ms	Relative V-change characteristic

4.6.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonic & Flicker	California	PACS-1	72344	Jun.01.2010
2	Power Source	California	3001iX	56309	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

4.6.3 TEST PROCEDURE

a. Harmonic Current Test:
Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC 61000-3-2 depend on which standard adopted for compliance measurement.

b. Fluctuation and Flickers Test:
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC 61000-3-3 depend on which standard adopted for compliance measurement.

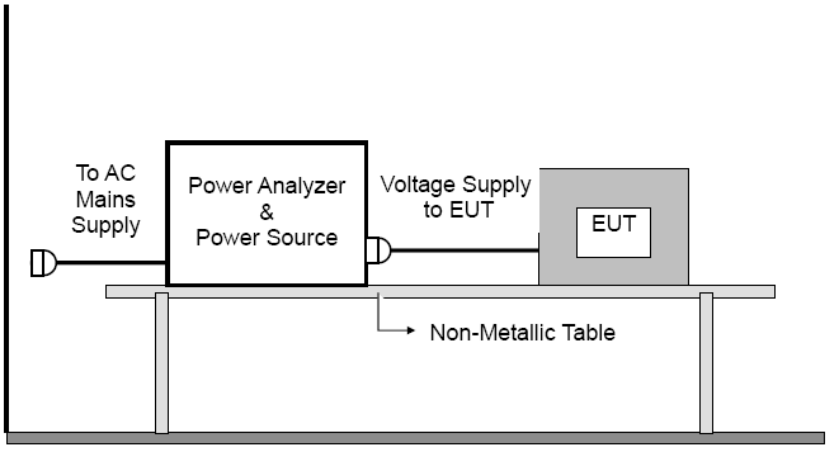
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

d. For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 3.3)

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



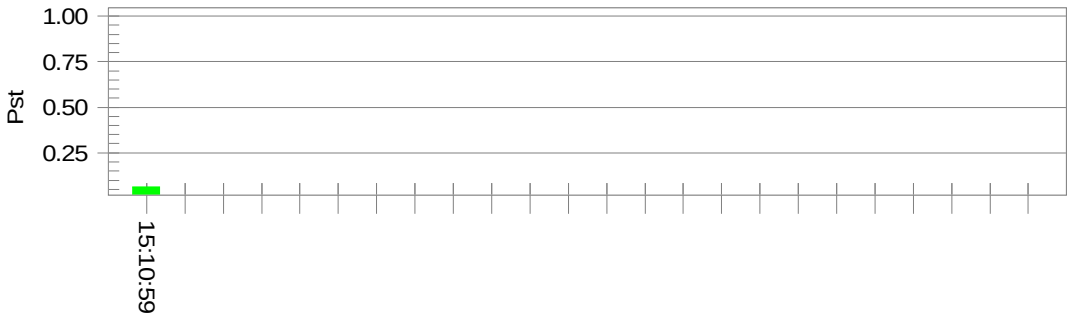
4.6.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.7** Unless otherwise a special operating condition is specified in the follows during the testing.

4.6.7 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	27° C	Relative Humidity :	59 %
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Pst_i and limit line **European Limits**



Time is too short for Plt plot

Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.40				
Highest dt (%):	0.00	Test limit (%):	3.30	PASS
Time(mS) > dt:	0.0	Test limit (mS):	500.0	PASS
Highest dc (%):	0.00	Test limit (%):	3.30	PASS
Highest dmax (%):	0.00	Test limit (%):	4.00	PASS
Highest Pst (10 min. period):	0.064	Test limit:	1.000	PASS
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	PASS

5. EMC IMMUNITY TEST

5.1 STANDARD COMPLIANCE/SEVERITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION Level	Test Mode Test Ports	Perform. Criteria	Remark
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B	
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz 3V/m(rms), 1 KHz, 80%, AM modulated	Enclosure	A	
3. EFT/Burst IEC/EN 61000-4-4	1.0KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B	
	0.5 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B	N/A (2)
4. Surges IEC/EN 61000-4-5	0.5 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-N	B	
	1 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-PE N-PE	B	
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	CTL/Signal Port	A	N/A (1)
	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	AC Power Port	A	
	0.15 MHz to 80 MHz 3V(rms), 1KHz 80%, AM Modulated 150Ω source impedance	DC Power Port	A	N/A
6. Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage dip100% Voltage dip 40% Interruption＞95%	AC Power Port	B C C	
7. Magnetic Fields Refer Annex A of EN 55103 for details	No-Rack mount: Use Helmholtz coil/large loop	Enclosure	A	
	Rack mount: Using small loop as per Mil Std 461	Enclosure	A	N/A
8. Audio Frequency Common Mode Refer Annex B of EN 55103	Balanced signal and control ports which may exceed 10m	CTL/Signal Port	A	(2)

* Remark:

N/A : denotes test is not applicable in this Test Report

(1) : Applicable only to cables which according to the manufacturer's specification supports communication on cables lengths greater than 3 m.

(2) : Products use Unbalanced signal line.

5.2 GENERAL PERFORMANCE CRITERIA

According to **EN55103-2** standard, the general performance criteria as following:

Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	After the test, the equipment shall continue to operate as intended without operator Intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state if stored data allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

5.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

5.4 ESD TESTING

5.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge：2kV/4kV/8kV (Direct) Contact Discharge：2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 200 times in total
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

5.4.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	ESD Simulator	Thermo	MZ-15/EC	0502186	Nov.16.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.4.3 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

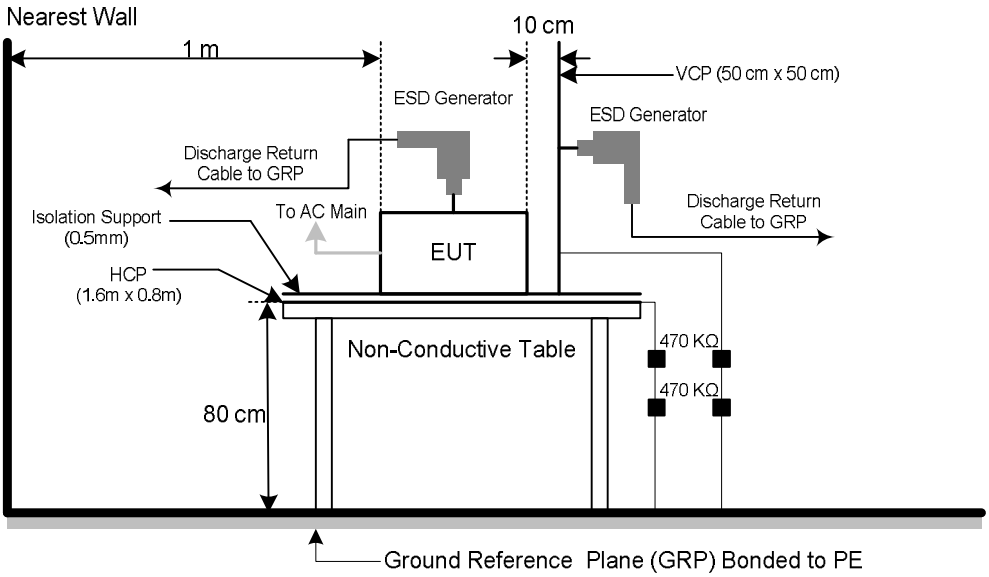
a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

5.4.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	22°C	Relative Humidity :	47%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

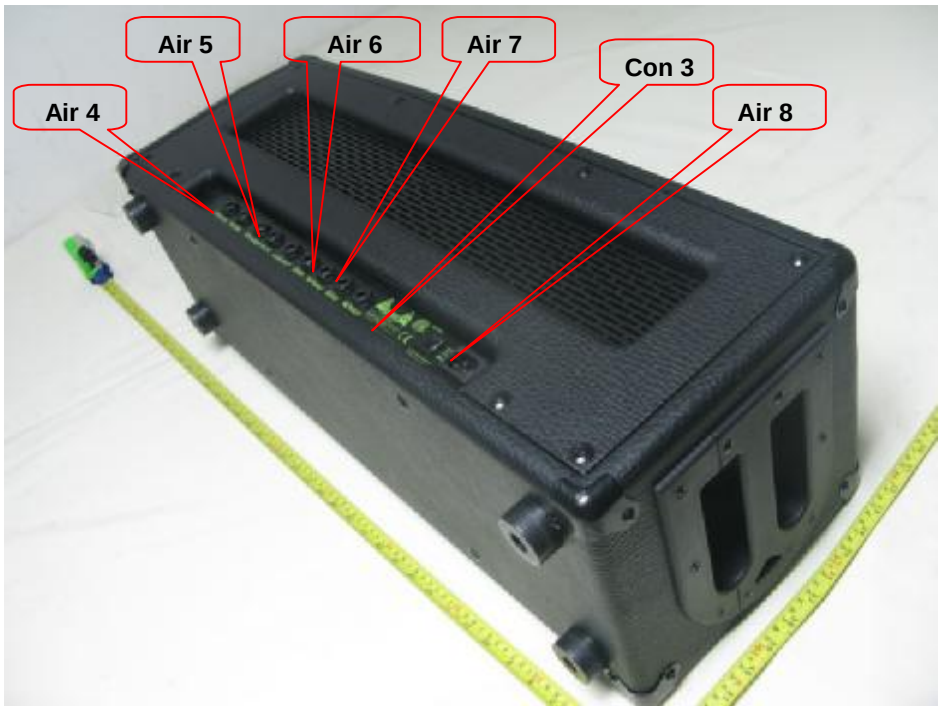
Mode	Air Discharge								Contact Discharge							
	2KV		4KV		8KV		15KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	A	A	A	A			A	A	A	A				
2	A	A	A	A	A	A			A	A	A	A				
3	A	A	A	A	B	B			A	A	A	A				
4	A	A	A	A	B	B										
5	A	A	A	A	B	B										
6	A	A	A	A	B	B										
7	A	A	A	A	B	B										
8	A	A	A	A	B	B										
9																
10																
Criteria	**B**								**B**							
Result	**B**								**A**							
Judgment	**PASS**								**PASS**							

Mode	HCP Discharge								VCP Discharge							
	2KV		4KV		6KV		8KV		2KV		4KV		6KV		8KV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	A	A					A	A	A	A				
2	A	A	A	A					A	A	A	A				
3	A	A	A	A					A	A	A	A				
4	A	A	A	A					A	A	A	A				
Criteria	**B**								**B**							
Result	**A**								**A**							
Judgment	**PASS**								**PASS**							

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) Test condition:
   Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
3) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
4) The Indirect (HCP/VCP) discharges description of test point as following:
   1.left side 2.right side 3.front side 4.rear side
5) N/A - denotes test is not applicable in this test report
6) Criteria A: There was no change operated with initial operating during the test.
7) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
8) Criteria C: The system shut down during the test.

5.4.7 PHOTO(S) SHOWN THE LOCATION(S) OF ESD EVALUATED



5.5 RS TESTING

5.5.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1% of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

5.5.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Digital Signal Generator	HP	ESG-D3000A	US36260188	Jun.01.2010
2	Antenna	ETS	3142C	00047662	Jun.01.2010
3	Amplifier	AR	250W1000AM1	326727	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.5.3 TEST PROCEDURE

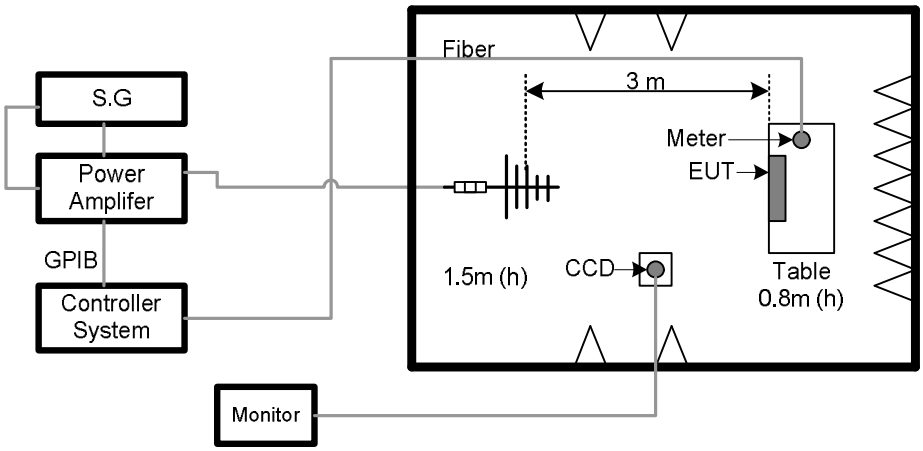
The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition as following manner:

a. The field strength level was 3V/m.
b. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
e. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

5.5.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53 %
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	Judgment
80MHz - 1000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	0	**A**	**A**	**PASS**
			90			
			180			
			270			

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) N/A - denotes test is not applicable in this test report.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

5.6 EFT/BURST TESTING

5.6.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance	B
Test Voltage :	Power Line: 1 kV Signal/Control Line: 0.5 KV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

5.6.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMC Immunity Test System	Thermo	EMCPRO PLUS	0502214	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.6.3 TEST PROCEDURE

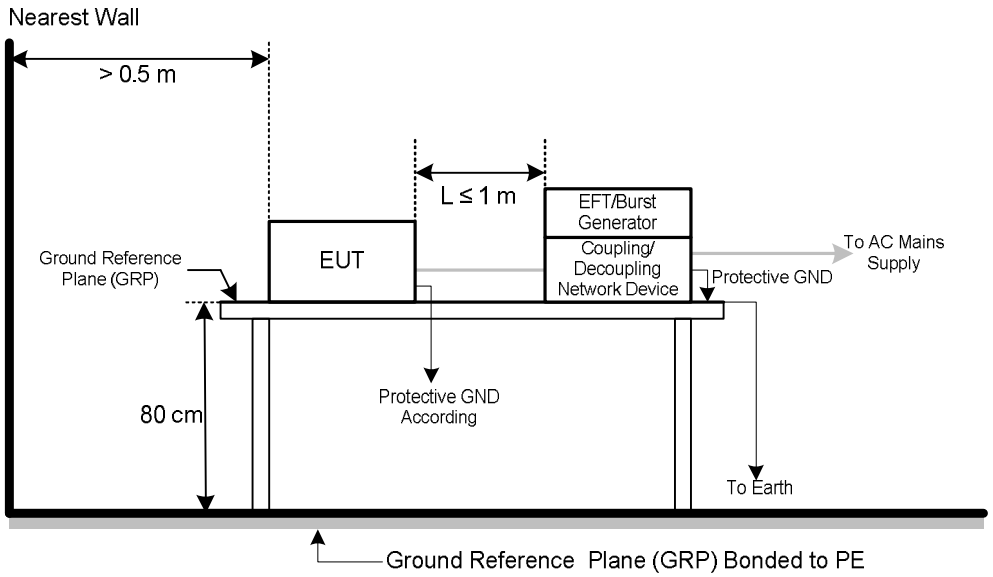
The EUT and support equipment(s) are placed on a table that is 0.8 meter high above a metal ground plane and should be located 0.1m+/-0.01m high above the Ground Reference Plane (1m*1m min. and 0.65mm thick min).
The other condition as following manner:

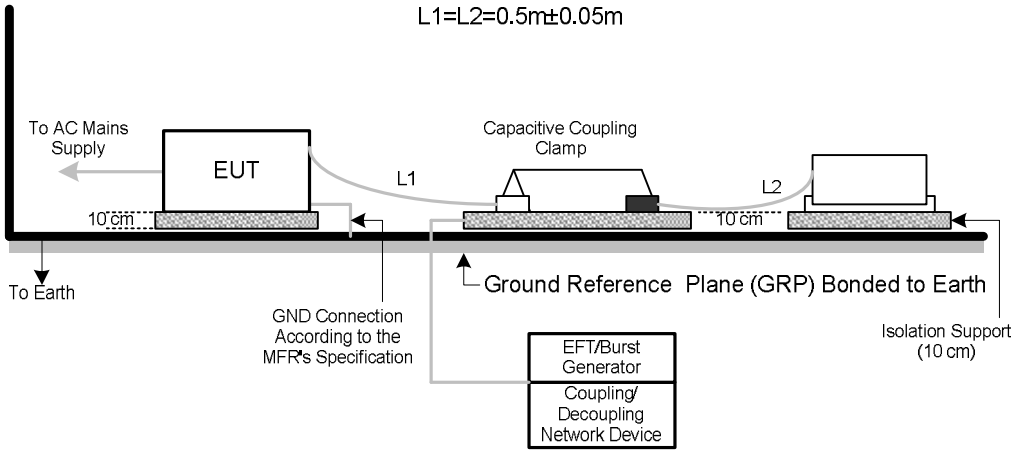
a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.
b. Both positive and negative polarity discharges were applied.
c. The duration time of each test sequential was 1 minute

2.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP





Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane and should be located 0.1m+/-0.01m above the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

5.6.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53 %
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Mode	(**V**) AC Power Line		( ) DC Power Line		( ) Signal/Control Line	
Test Level	1KV		0.5KV		0.5KV	
Port(s)	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P	B	P		P	
	N	B	N		N	
Neutral (N)	P	B	P		P	
	N	B	N		N	
Ground (PE)	P	B	P		P	
	N	B	N		N	
Signal/Control Line	P		P		P	
	N		N		N	
Criteria	**B**		**B**		**B**	
Result	**B**		**N/A**		**N/A**	
Judgment	**PASS**		**N/A**		**N/A**	

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) N/A - denotes test is not applicable in this test report
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

5.7 SURGE TESTING

5.7.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage :	Power Line：0.5 kV, 1 kV, 2 kV
Surge Input/Output:	L1-L2, L1-PE, L2-PE
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0 /90/180/270
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

5.7.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMC Immunity Test System	Thermo	EMCPRO PLUS	0502214	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.7.3 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

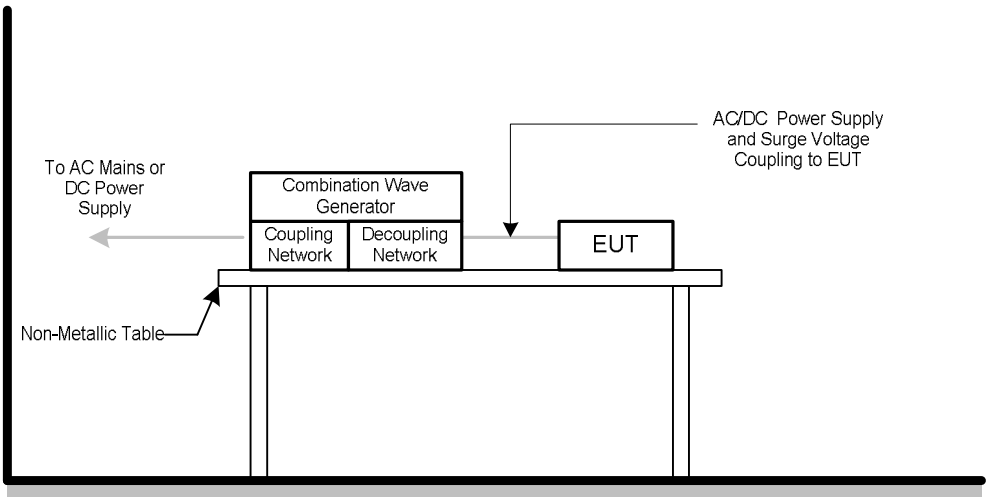
c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

5.7.4 DEVIATION FROM TEST STANDARD

No deviation

5.7.5 TEST SETUP



5.7.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Judgment
	Polarity	Phase	Voltage					
			0.5Kv	1kV	1.5kV	2kV		
L - N	+/-	0°	A				**B**	**PASS**
	+/-	90°	A					
	+/-	180°	A					
	+/-	270°	A					
L - PE	+/-	0°	A	A			**B**	**PASS**
	+/-	90°	A	A				
	+/-	180°	A	A				
	+/-	270°	A	A				
N - PE	+/-	0°	A	A			**B**	**PASS**
	+/-	90°	A	A				
	+/-	180°	A	A				
	+/-	270°	A	A				

Note:

1) Polarity and Numbers of Impulses：5 Pst / Ngt at each tested mode
2) N/A - denotes test is not applicable in this Test Report
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

5.8 INJECTION CURRENT TESTING

5.8.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-6
Required Performance	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 Vr.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1% of fundamental
Dwell Time:	at least 3 seconds

5.8.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Signal Generator	HP	8648A	3636A02964	Jun.01.2010
2	Power Amplifier	Teseq	CBA230M-080	T43748	Jun.01.2010
3	CDN	MEB	M3	13389	Jun.01.2011

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.8.3 TEST PROCEDURE

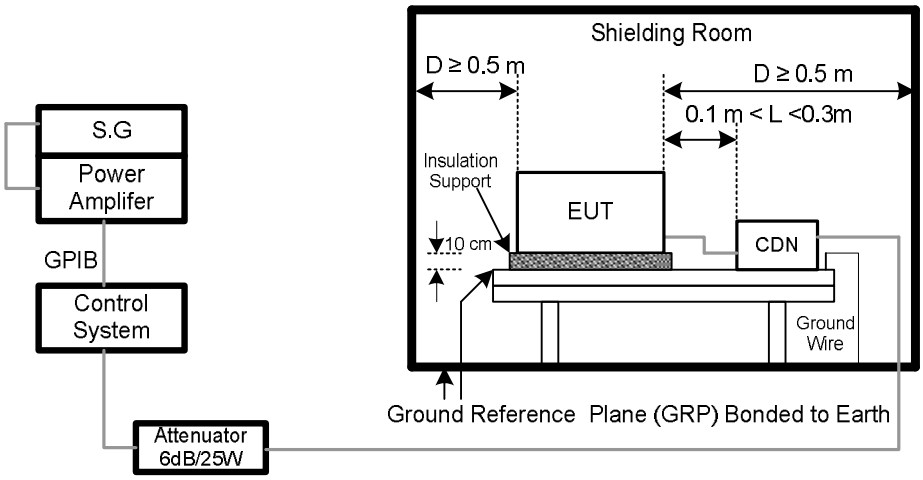
The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The field strength level was 3V.
b. The frequency range is swept from 150 KHz to 80 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

5.8.4 DEVIATION FROM TEST STANDARD

No deviation

5.8.5 TEST SETUP



For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

5.8.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---80	3V(rms) AM Modulated 1000Hz, 80%	**A**	**A**	**PASS**
Input/ Output DC. Power Port	0.15 --- 80		**A**	**N/A**	**N/A**
Signal Line (N/A)	0.15 --- 80		**A**	**A**	**PASS**

Note:

1) N/A - denotes test is not applicable in this Test Report.
2) Criteria A: There was no change operated with initial operating during the test.
3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
4) Criteria C: The system shut down during the test.

5.9 POWER FREQUENCY MAGNETIC FIELD TESTING

5.9.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-8
Required Performance	A
Frequency Range:	50Hz
Field Strength:	1 A/m
Observation Time:	1 minute
Inductance Coil:	Rectangular type, 1mx1m

5.9.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Magnetic Field Test Generator	FCC	F-1000-4-8-G-125A	04032	Jun.01.2010
2	Magnetic Field immunity loop	Thermo KeyTek	F-1000-4-8/9/10-L-1M	04024	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.9.3 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

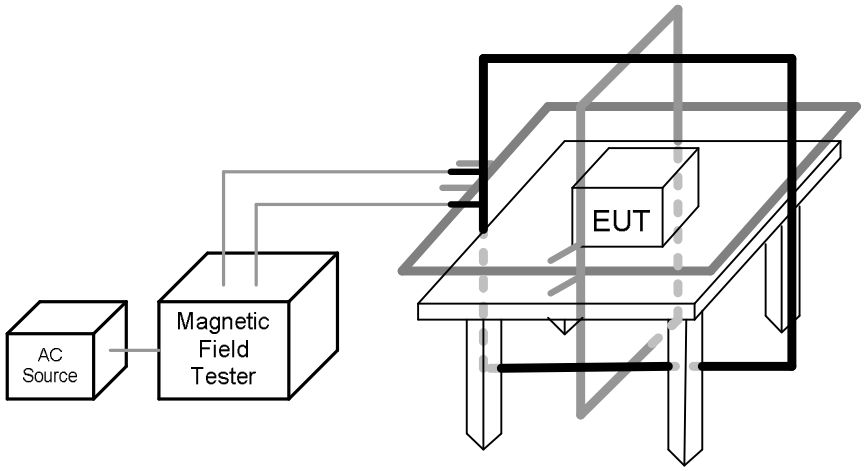
The other condition as following manner:

a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.
c. For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 3.3).

5.9.4 DEVIATION FROM TEST STANDARD

No deviation

5.9.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50% of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

5.9.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

Test Mode	Test Level	Antenna aspect	Duration (s)	Perform Criteria	Results	Judgment
Enclosure	1 A/m	X	60 s	**A**	**A**	**PASS**
Enclosure	1 A/m	Y	60 s	**A**	**A**	**PASS**
Enclosure	1 A/m	Z	60 s	**A**	**A**	**PASS**

Note:

1) N/A - denotes test is not applicable in this test report
2) Criteria A: There was no change operated with initial operating during the test.
3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
4) Criteria C: The system shut down during the test.

5.10 VOLTAGE INTERRUPTION/DIPS TESTING

5.10.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance	B (For 100% Voltage Dips) C (For 40% Voltage Dips) C (For >95% Voltage Interruptions)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

5.10.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMC Immunity Test System	Thermo	EMCPRO PLUS	0502214	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

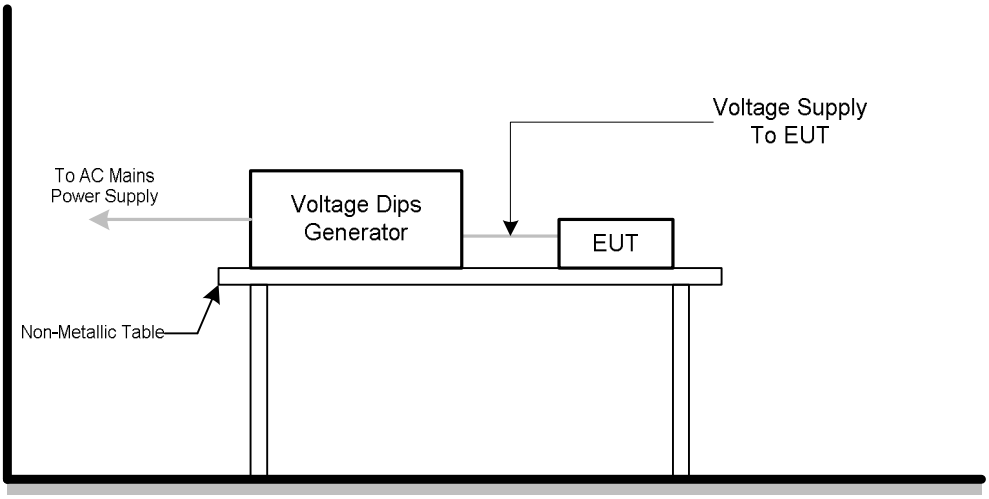
5.10.3 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

5.10.4 DEVIATION FROM TEST STANDARD

No deviation

5.10.5 TEST SETUP



For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 3.3).

5.10.6 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	53%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		

AC 230V/50Hz				
Voltage Reduction	Periods	Perform Criteria	Results	Judgment
Voltage dip 100%	1	**B**	**A**	**PASS**
Voltage dip 40%	5	**C**	**A**	**PASS**
Interruption＞95%	250	**C**	**C**	**PASS**

Note:

1). N/A - denotes test is not applicable in this test report.
2) Criteria A: There was no change operated with initial operating during the test.
3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
4) Criteria C: The system shut down during the test.

5.11 MAGNETIC FIELDS TESTING

5.11.1 TEST SPECIFICATION

Magnetic Emissions	FREQUENCY	E1 (A/m)	E2 / E3 (A/m)	E4 (A/m)	E5 (A/m)	Perform. Criteria
Non-Rock mount	50Hz – 5KHz	1 – 0.01	3 - 0.03	0.8 – 0.008	10 – 0,1	A
	5KHz – 10KHz	0.01	0.0.3	0.008	0,1	A
Rock mount	50Hz – 5KHz	4 – 0.04				A
	5KHz – 10KHz	0.04				A

Remark: CRT degradation permitted above 1A/m for E1-4 and 3A/m for E5.

5.11.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Audio Analyzer	Audio Precision	SYS-2222	000274	Jun.01.2010

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

5.11.3 TEST PROCEDURE

Test method for homogeneous fields using Helmholtz coils:

a. Apparatus shall be fed with real life signals chosen with regard to the phenomenon being investigated

b. Testing of apparatus under test

Select test frequencies and orient the apparatus as follows:

i. Position the apparatus in the coils.

ii. Supply the coils with sufficient current to produce magnetic field strengths of the level specified in table 2.

iii. Scan the applicable frequency range in an appropriate way using about three frequencies per decade, or a continuous scan, and paying particular regard to the working principles of the apparatus under test. Rotate the apparatus under test at each frequency and note any frequencies where susceptibility is found.

Test method for pseudo- homogeneous fields using a large radiating coils:

a. Apparatus shall be fed with real life signals chosen with regard to the phenomenon being investigated

b. Testing of apparatus under test

Select test frequencies and orient the apparatus as follows:

i. Position the radiating coils 0.1±0.005m from one face the apparatus under test. The plane of the coil shall be parallel to the plane of the surfaces of the apparatus under test.

ii. Supply the coils with sufficient current to produce magnetic field strengths of the level specified in table 2.

iii. Scan the applicable frequency range in an appropriate way using about three frequencies per decade, or a continuous scan, and paying particular regard to the working principles of the apparatus under test. Rotate the apparatus under test at each frequency and note any frequencies where susceptibility is found.

iv. Reposition the coil successively over each face of the apparatus under test, and repeat iii to determine locations and frequencies of susceptibility.

Test method for inhomogeneous fields using a small radiating loop:

a. Apparatus shall be fed with real life signals chosen with regard to the phenomenon being investigated

b. Testing of apparatus under test

Select test frequencies and orient the apparatus as follows:

i. Position the radiating loop 5 cm ±0.25cm from one face the apparatus under test. The plane of the coil shall be parallel to the plane of the surfaces of the apparatus under test.

ii. Supply the loop with sufficient current to produce magnetic field strengths of the level specified in table 2.

iii. Scan the applicable frequency range in an appropriate way using about three frequencies per decade, or a continuous scan, and paying particular regard to the working principles of the apparatus under test. Rotate the apparatus under test at each frequency and note any frequencies where susceptibility is found.

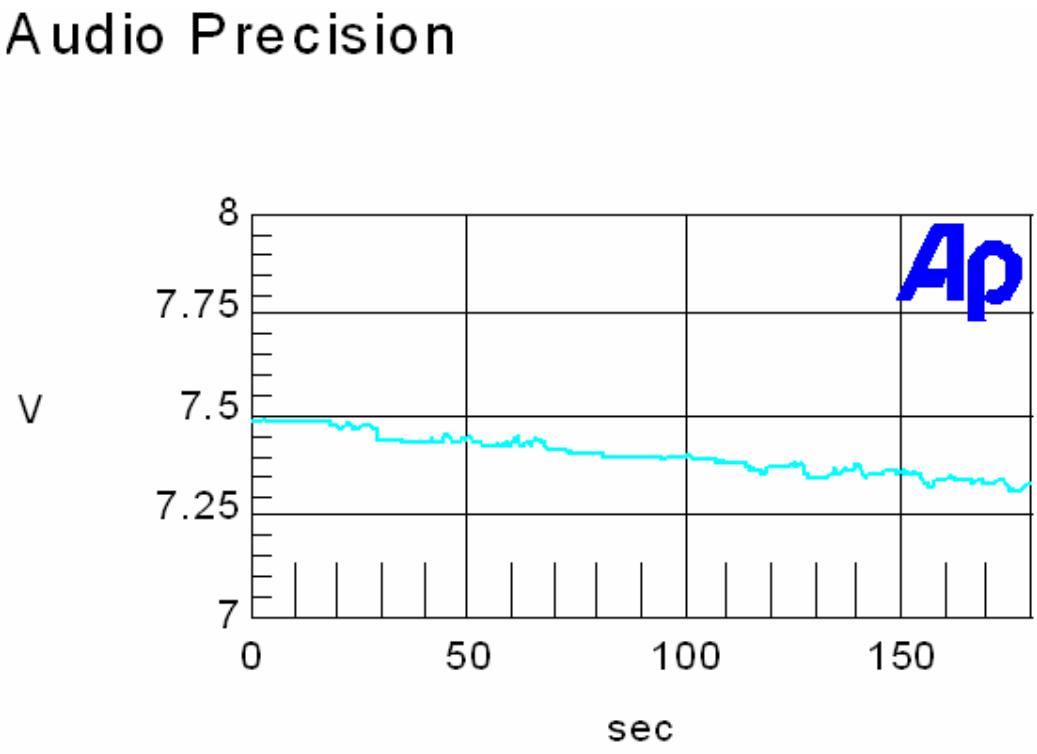
iv. Reposition the loop successively over to a location in each 30 cm by 30 cm area on the top and bottom faces of the apparatus under test, and repeat iii to determine locations and frequencies of susceptibility.

5.11.4 DEVIATION FROM TEST STANDARD

No deviation

5.11.5 TEST RESULTS

E.U.T :	Guitar Amplifier	Model Name :	D100
Temperature :	18° C	Relative Humidity :	52%
Pressure :	1013 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	LOW LEVEL IN		



Color	Line Style	Thick	Data
Cyan	Solid	1	Anlr.Level A