

Verification of Compliance

Product Name : Power Amplifier
Brand Name : AMC
Model No. : XG
Applicant : Amcli international Corp.
Address : 5F., No. 8, Alley 11, Lane 327, Sec. 2, Chung San Road, Chung Ho District, New Taipei City, Taiwan, R.O.C.
Report Number : S1C13-A520-1111-256
Issue Date : February 23, 2012
Applicable Standards : EN 55013:2001+A1:2003+A2:2006
AS NZS CISPR13:2004
EN 61000-3-2:2006+A1:2009+A2:2009
EN 61000-3-3:2008
EN 55020:2007
- IEC 61000-4-2: 2008
- IEC 61000-4-4: 2004+A1:2010

Based on the EMC Directive 2004/108/EC and the specifications of the customer, one sample of the designated product has been tested in our laboratory and found to be in compliance with the EMC standards cited above.



TAF 0905
FCC CAB Code TW1053
NVLAP Lab Code 200575-0
IC Code 4699A
VCCI Accep. No. R-1527, C-1609, T-1441, G-10

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(Tsun-Yu Shih/ General Manager)

Date: February 23, 2012

CE EMC Test Report

for

Power Amplifier

Trade Name : AMC
Model Number : XG
Report Number : S1C13-A520-1111-256
Date of Receipt : November 25, 2011
Date of Report : February 23, 2012

Prepared for

Amcli international Corp.

5F., No. 8, Alley 11, Lane 327, Sec. 2, Chung San Road, Chung Ho District, New Taipei City,
Taiwan, R.O.C.



Prepared by


Central Research Technology Co. **EMC Test Laboratory**

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Verification of Compliance

Equipment Under Test : Power Amplifier
Model No. : XG
Applicant : Amcli international Corp.
Address : 5F., No. 8, Alley 11, Lane 327, Sec. 2, Chung San Road,
Chung Ho District, New Taipei City, Taiwan, R.O.C.
Applicable Standards : **EN 55013:2001+A1:2003+A2:2006**
AS/NZS CISPR 13:2004
EN 61000-3-2: 2006 +A1:2009 +A2:2009
EN 61000-3-3:2008
EN 55020:2007
- IEC 61000-4-2:2008
- IEC 61000-4-4:2004+A1:2010



Date of Testing : November 30, 2011~January 18, 2012
Deviation : N/A
Condition of Test Sample : Engineering Sample

We, **Central Research Technology Co.**, hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Cathy Chen , **DATE** : Feb. 23, 2012
(Cathy Cehn/System Executive)

APPROVED BY : J. Y. Shih , **DATE** : Feb. 23, 2012
(Tsun-Yu Shih/General Manager)

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Attachment 1 – Photographs of the Test Configurations
Attachment 2 – Photographs of EUT

1. General Description

1.1 General Description of EUT

Equipment Under Test : Power Amplifier
Model No. : XG
Ratings : 230V, 50Hz
Manufacturer : Amcli international Corp.

Function Description :

The EUT is an engineering sample of the Power Amplifier. Please refer to the user's manual for the details.

The I/O ports of EUT are listed below:

NO.	I/O Port Type	Quantity
1	CH 1-2 port(L,R)	1set
2	CH 3-4 port(L,R)	1set
3	CH 5-6 port(L,R)	1set
4	CH 7-8 port(L,R)	1set
5	CH 9-10 port(L,R)	1set
6	CH 11-12 port(L,R)	1set
7	CH 13-14 port(L,R)	1set
8	CH 15-16 port(L,R)	1set
9	CH 1-2 SPEAKERS OUT port(L,R)	1set
10	CH 3-4 SPEAKERS OUT port(L,R)	1set
11	CH 5-6 SPEAKERS OUT port(L,R)	1set
12	CH 7-8 SPEAKERS OUT port(L,R)	1set
13	CH 9-10 SPEAKERS OUT port(L,R)	1set
14	CH 11-12 SPEAKERS OUT port(L,R)	1set
15	CH 13-14 SPEAKERS OUT port(L,R)	1set
16	CH 15-16 SPEAKERS OUT port(L,R)	1set
17	RS232 port	1
18	IR port	2

1.2 Test Mode

The EUT has eight set of speakers output ports, and the mode that CH15-16 SPEAKERS OUT ports connected to speakers was selected by its manufacturer to perform all tests. It was taken as the representative condition to perform the final compliance test and its data are recorded in the present document.

There are two output modes for SPEAKER OUT port which shown as below.

Test Mode	Output
Mode 1	2CH Mode
Mode 2	Bridge Mode

According to the preliminary test, It was found that the Mode 1 is worse. It was taken as the representative condition for test and its data are recorded in the present document.

1.3 Applied standards

According to the specifications of the manufacturer and the requirements set in European Council EMC Directive 2004/108/EC, the applied standards to evaluate the compliance of the EUT are as following:

Applied Standards		Test Items	Results
<input checked="" type="checkbox"/> EN55013: 2001+A1:2003+A2:2006 <input checked="" type="checkbox"/> AS/NZS CISPR 13:2004		<input checked="" type="checkbox"/> Conducted Emission Measurement	<u>PASS</u>
		<input checked="" type="checkbox"/> Disturbance Power Measurement	<u>PASS</u>
		<input type="checkbox"/> Radiated Emission Measurement	<u>N/A</u>
		<input type="checkbox"/> Disturbance Voltage at the Antenna Terminals Measurement	<u>N/A</u>
<input checked="" type="checkbox"/> EN 61000-3-2:2006 +A1:2009 +A2:2009		Harmonic Current Emission Measurement	<u>PASS</u>
<input checked="" type="checkbox"/> EN 61000-3-3:2008		Voltage Fluctuation and Flicker Emission Measurement	<u>PASS</u>
<input checked="" type="checkbox"/> EN 55020: 2007		<input type="checkbox"/> Immunity Against Input Interference (S1)	<u>N/A</u>
		<input checked="" type="checkbox"/> Immunity Against RFI Voltage(S2a)	<u>PASS</u>
		<input type="checkbox"/> Immunity Against RFI Current(S2b)	<u>N/A</u>
		<input checked="" type="checkbox"/> Immunity Against Radiated RFI (S3)	<u>PASS</u>
		<input type="checkbox"/> Screening Effectiveness (S4)	<u>N/A</u>
		<input checked="" type="checkbox"/> Keyed Carrier(S5)	<u>PASS</u>
		<input type="checkbox"/> Immunity from Radiated field not fitting inside the open strip line (S6)	<u>N/A</u>
<input checked="" type="checkbox"/> EN 55020:2007	<input checked="" type="checkbox"/> IEC 61000-4-2:2008	Electrostatic discharge Test (ESD)	<u>PASS</u>
	<input checked="" type="checkbox"/> IEC 61000-4-4:2004 +A1:2010	Electrical fast transient / burst immunity Test (EFT)	<u>PASS</u>

1.4 Test Setup for the EUT

The EUT is an unique unit connected with other necessary accessories and support units listed in the next section. It has been tested against each standard after the following setup steps:

EN 55013, EN 61000-3-2, EN 61000-3-3, ESD and EFT

- a. Connect the EUT and all the support units to the appropriate power source.
- b. Turn on the EUT and all the accessories and support units.
- c. The DVD player sends 1kHz audio signal to the speakers by the EUT.
- d. Adjust the speaker output of the EUT to 1/8 rated power.
- e. Repeat and keep setup steps listed above before and during all tests.

EN 55020 (S2a, S3, S5)

- a. Connect the EUT and all the support units to the appropriate power source.
- b. Turn on the EUT and all the accessories and support units.
- c. The TS9980 TV sound test signal system plays the wanted and unwanted signals to the EUT.
- d. Repeat and keep setup steps listed above before and during all tests.

1.5 The Support Units

EN 55013

No.	Unit	Model No./ Serial No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	DVD Player	DVD-S660/ 7114151	N/A	Panasonic	1.8m	✓
2	Speaker	SP-600F/ 338022	N/A	TATUNG	N/A	✓

EN 61000-3-2, EN 61000-3-3, ESD and EFT

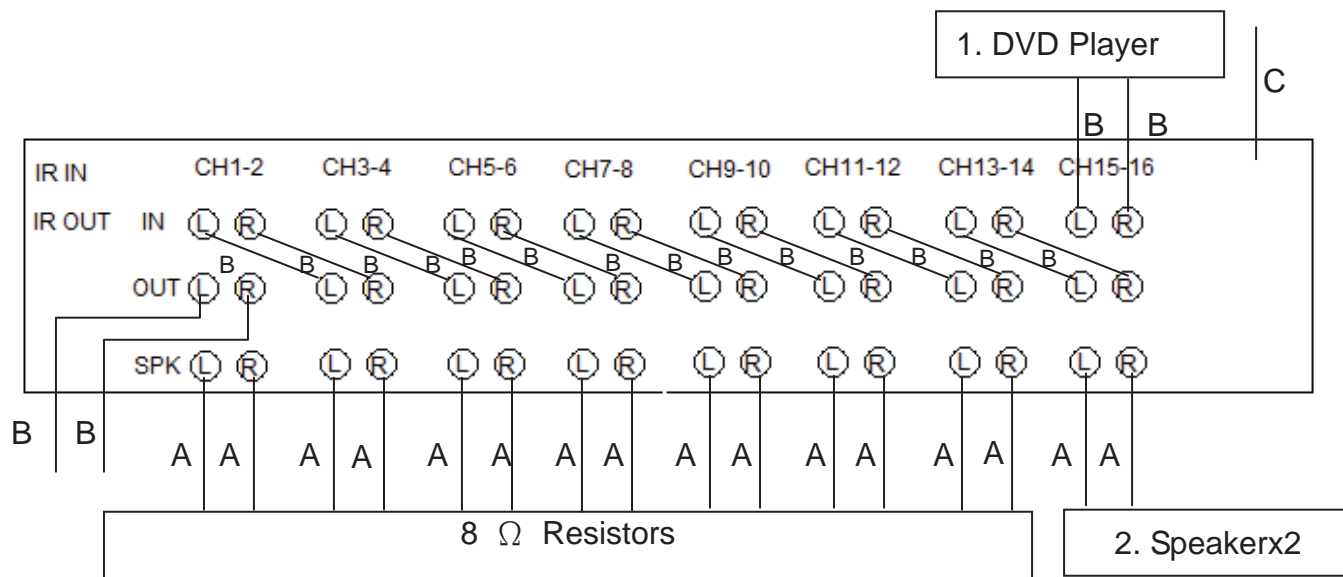
No.	Unit	Model No./ Serial No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	DVD Player	DVD-S660/ 7315194	N/A	Panasonic	1.8m	✓
2	Speaker	SP-600F/ 338022	N/A	TATUNG	N/A	✓

EN 55020 (S2a, S3, S5)

No.	Unit	Model No./ Serial No.	FCC ID	Trade Name	Power Cord	Supported by lab.
1	DVD Player	KVD-1080/ 0601000119	DoC	KOLIN	1.4m	✓

1.6 Layout of the Setup

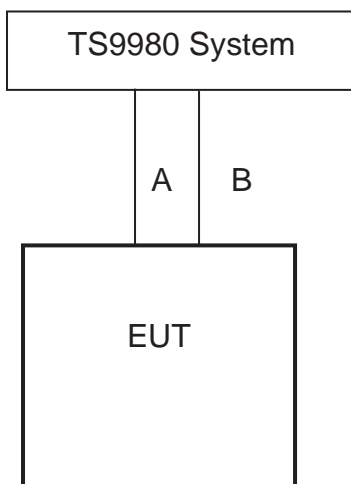
EN 55013, EN 61000-3-2, EN 61000-3-3, ESD and EFT



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	Speaker cable	1.2m	✓			✓	
B	AV cable	1.2m	✓			✓	
C	RS232 cable	1.7m	✓			✓	floating

EN 55020 (S2a, S3, S5)



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	AV*2 cable	1.2m	✓			✓	
B	Signal Cable	>3m	✓			✓	

1.7 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22/ EN 55022 for the radiated emission measurement.
TR11	3m semi-anechoic chamber (9m×6m×6m)	
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.
TR2	3m fully-anechoic chamber (7m×3m×3m)	Complying with the field uniformity requirements in standard IEC/ EN 61000-4-3 for the radiated immunity test.
TR7	Shielding Room (5m×3m×3m)	For the Current Harmonic / Voltage Flicker and other immunity tests.
TR8	Shielding Room (5m×3m×3m)	
AR	Shielding Room (3m×3m×3m)	
TR20	Shielding Room (8.5m×4m×2.5m)	For Input Immunity (S1) Immunity from conducted Voltage (S2a) Immunity to RF voltages (common mode) of antenna terminals (S2b) Immunity from Radiated field(S3) Screening Effectiveness (S4)

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033 SL2-L1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046,TW1053	Test facility list & NSA Data
	Canada	IC	4699A-1,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-1441,G-10	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	10021687	ISO/IEC 17025
	Norway	Nemko	ELA 212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

2. Conducted Emission Measurement

Test Result : PASS

2.1 Limits for Emission Measurement

Limits for conducted disturbances at the power mains

Frequency (MHz)	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 to 0.5	66 – 56	56 – 46
0.5 to 5	56	46
5 to 30	60	50

Note 1- The lower limit shall apply at the transition frequency.
Note 2- The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz for Class B equipment.

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS 30/ 836858/021	Jan. 11, 2012	Jan. 11, 2013
LISN	R&S	ESH2-Z5/ 836613/001	June 2, 2011	June 2, 2012
50Ω terminator	N/A	N/A/ 001	Aug. 20, 2011	Aug. 20, 2012
RF Switch	N/A	RSU28/ 338965/002	Aug. 20, 2011	Feb. 21, 2012
RF Cable	N/A	N/A/ C0052 ~ 56	Aug. 20, 2011	Feb. 21, 2012
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
TR5 shielded room	ETS LINDGREN	TR5/ 15353-F	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Measurement Uncertainty

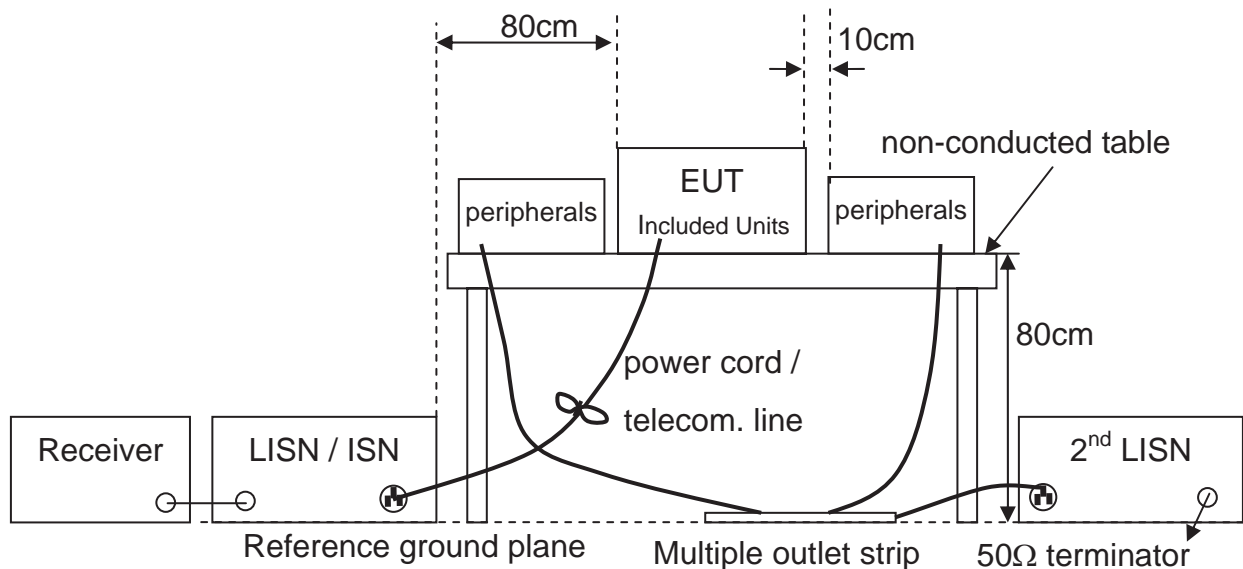
The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{CISPR} in table 1 of CISPR 16-4-2.

Equipment	Model Number	Uncertainty Value
LISN	ESH2-Z5	3.1dB
	ENV 4200	2.8dB

2.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 meters above the reference ground plane.
- c. Connect the EUT's power source lines to the appropriate power mains / peripherals through the LISN.
- d. All the other peripherals are connected to the 2nd LISN, if any.
- e. The LISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.
- f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.
- g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.
- h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.
- i. Record the level for each frequency and compare with the required limit.
- j. If the peak emission level is lower than the specified Average limit, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. or Average values will be measured and presented.

2.4 Test Configurations

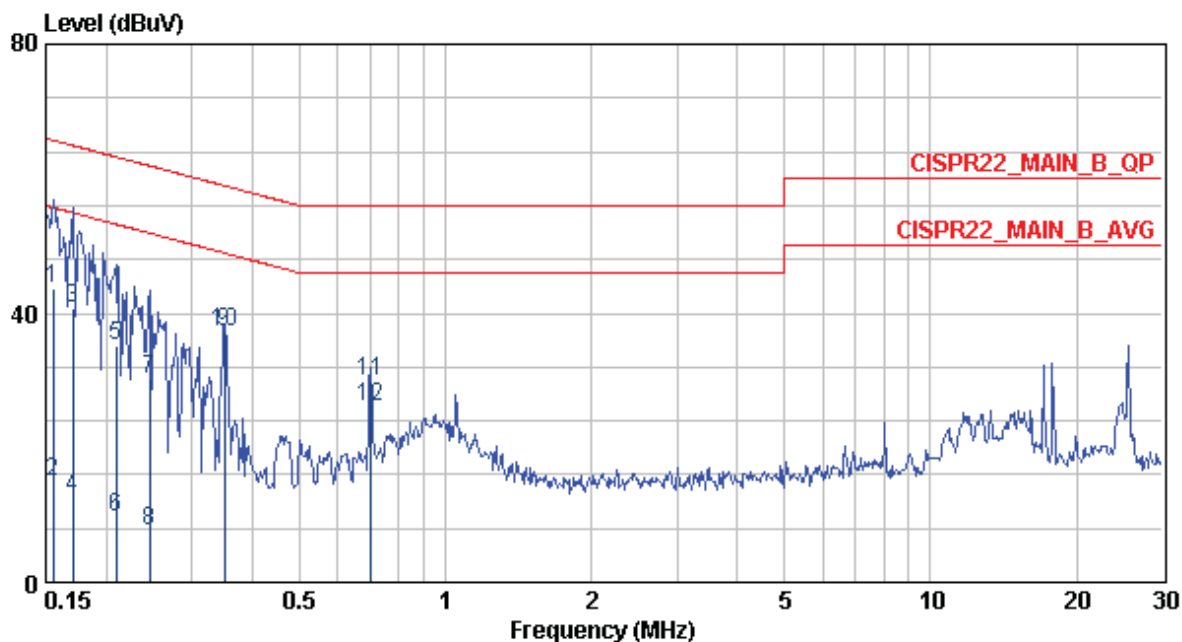


2.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

2.6 Test Results

Test Mode : Mode 1 **Test Voltage** : 230V/50Hz
Tester : Kent **Temperature** : 28°C
Humidity : 59%RH **Frequency Range** : 150kHz~30MHz
IF Bandwidth : 9kHz **Phase** : Line

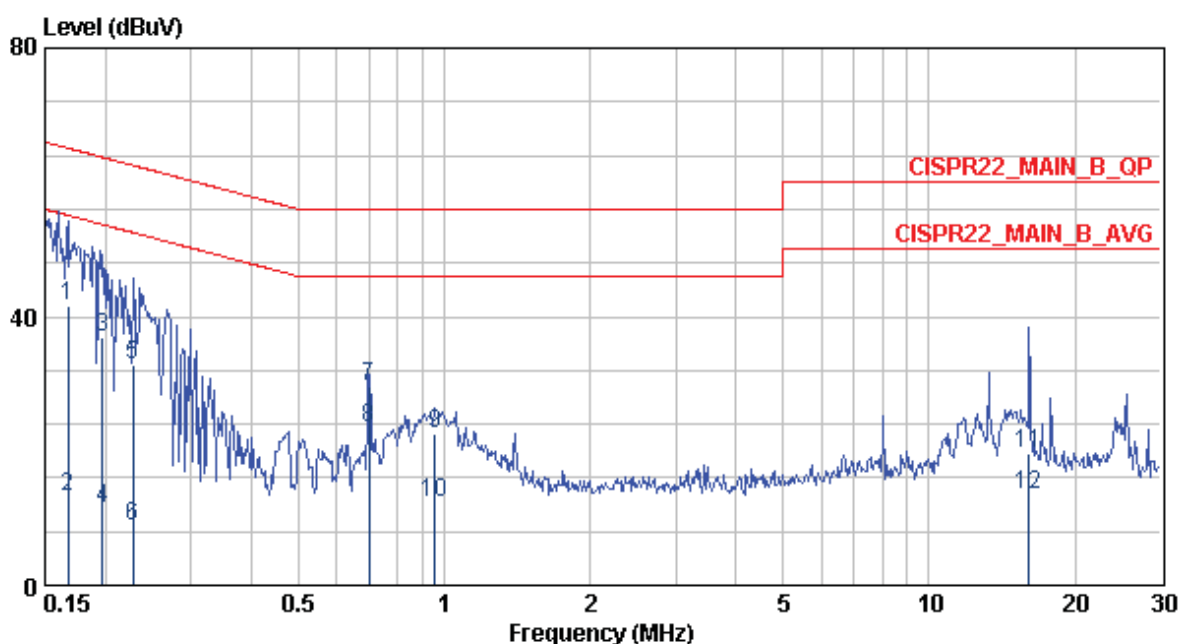


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.156	43.61	0.20	43.41	65.69	-22.08	LINE	QP
2	0.156	14.87	0.20	14.67	55.69	-40.82	LINE	AVERAGE
3	0.170	40.75	0.21	40.54	64.94	-24.19	LINE	QP
4	0.170	12.71	0.21	12.50	54.94	-42.23	LINE	AVERAGE
5	0.209	35.03	0.23	34.80	63.23	-28.20	LINE	QP
6	0.209	9.54	0.23	9.31	53.23	-43.69	LINE	AVERAGE
7	0.246	30.22	0.23	29.99	61.91	-31.68	LINE	QP
8	0.246	7.59	0.23	7.36	51.91	-44.31	LINE	AVERAGE
9	0.351	37.15	0.25	36.90	58.94	-21.79	LINE	QP
10	0.351	37.28	0.25	37.03	48.94	-11.66	LINE	AVERAGE
11	0.702	29.86	0.29	29.57	56.00	-26.14	LINE	QP
12	0.702	26.21	0.29	25.92	46.00	-19.79	LINE	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

Test Mode : Mode 1 **Test Voltage** : 230V/50Hz
Tester : Kent **Temperature** : 28°C
Humidity : 59%RH **Frequency Range** : 150kHz~30MHz
IF Bandwidth : 9kHz **Phase** : Neutral



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.168	41.58	0.20	41.38	65.08	-23.49	NEUTRAL	QP
2	0.168	13.04	0.20	12.84	55.08	-42.03	NEUTRAL	AVERAGE
3	0.198	37.07	0.23	36.84	63.71	-26.64	NEUTRAL	QP
4	0.198	11.57	0.23	11.34	53.71	-42.14	NEUTRAL	AVERAGE
5	0.228	32.85	0.23	32.62	62.52	-29.67	NEUTRAL	QP
6	0.228	8.71	0.23	8.48	52.52	-43.81	NEUTRAL	AVERAGE
7	0.701	29.56	0.29	29.27	56.00	-26.44	NEUTRAL	QP
8	0.701	23.46	0.29	23.17	46.00	-22.54	NEUTRAL	AVERAGE
9	0.958	22.58	0.31	22.27	56.00	-33.42	NEUTRAL	QP
10	0.958	12.18	0.31	11.87	46.00	-33.82	NEUTRAL	AVERAGE
11	16.055	19.71	0.77	18.94	60.00	-40.29	NEUTRAL	QP
12	16.055	13.47	0.77	12.70	50.00	-36.53	NEUTRAL	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

3. Disturbance Power Measurement

Test Result : PASS

3.1 Limits for Emission Measurement

Disturbance power limits

Frequency (MHz)	Quasi-peak (dBpW)	Average (dBpW)
30 to 300	45 – 55	35 – 45

Note 1- The limit increases linearly with the frequency in the range 30 MHz to 300MHz.

3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS 30/ 836858/021	Jan. 11, 2012	Jan. 11, 2013
Absorbing Clamp	R&S	MDS21/ 833711/029	June. 11, 2011	June. 11, 2012
RF Switch	N/A	RSU28/ 338965/002	Aug. 20, 2011	Feb. 21, 2012
RF Cable	N/A	N/A/ C0052 ~ 56	Aug. 20, 2011	Feb. 21, 2012
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
TR5 shielded room	ETS LINDGREN	TR5/ 15353-F	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Measurement Uncertainty

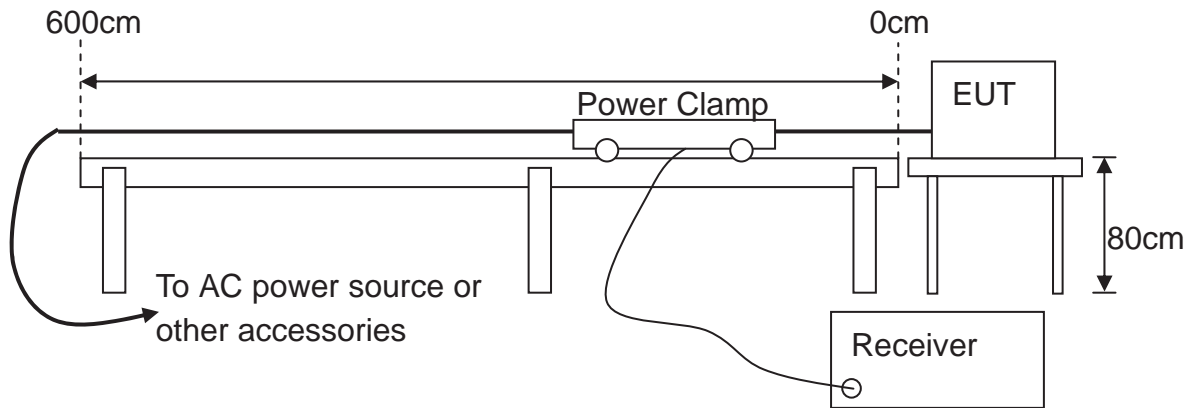
The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{CISPR} in table 1 of CISPR 16-4-2.

Equipment	Model Number	Uncertainty Value
Clamp	MDS21	4.0dB

3.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the reference ground plane.
- c. Connect each of the EUT's terminal line to the appropriate auxiliaries / accessories thorough the absorbing clamp.
- d. Measure the emissions on each terminal line of the EUT by using the test receiver connected to the RF output port of absorbing clamp which is fixed at the 0cm position.
- e. Rapidly scan the signal from 30MHz to 300MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each terminal line.
- f. Then measure each frequency found from step c by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.with moving the absorbing clamp from the position 0cm to 500cm to determine the maximum level.
- g. Record the level for each frequency and compare with the required limit.
- h. If the peak emission level is lower than the specified Average limit, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. or Average values will be measured and presented.

3.4 Test Configurations



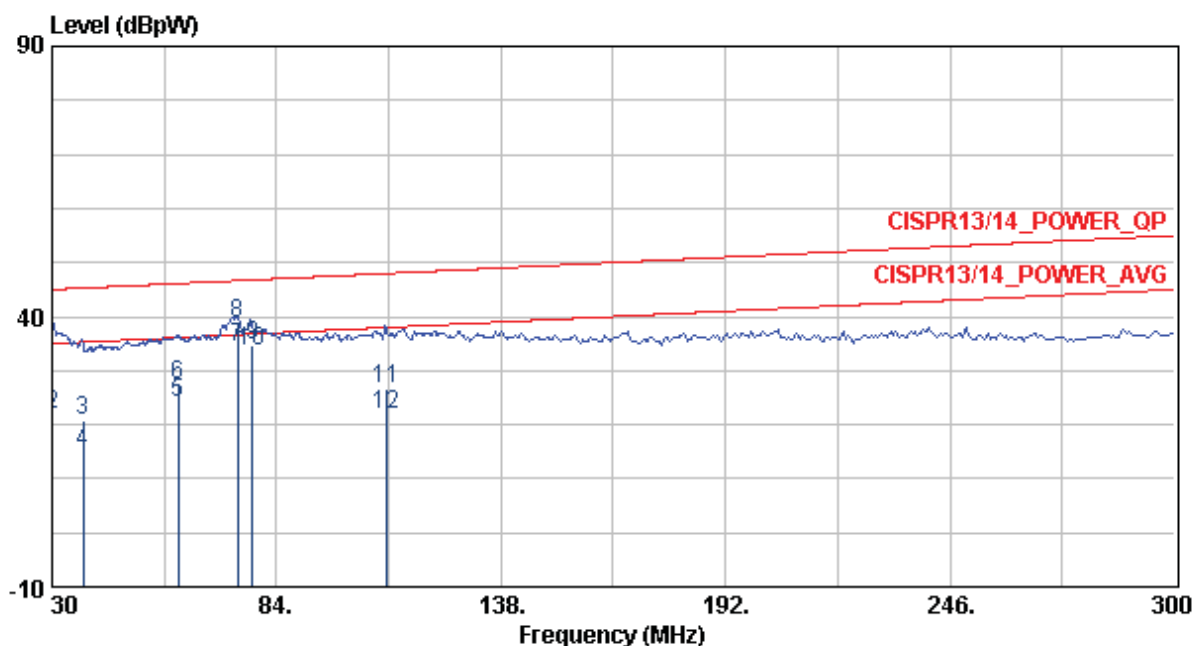
3.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

3.6 Test Results

Measurement at power line

Test Mode : Mode 1 **Test Voltage** : 230V/50Hz
Tester : Kent **Temperature** : 27°C
Humidity : 64%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Cable** : Power Line



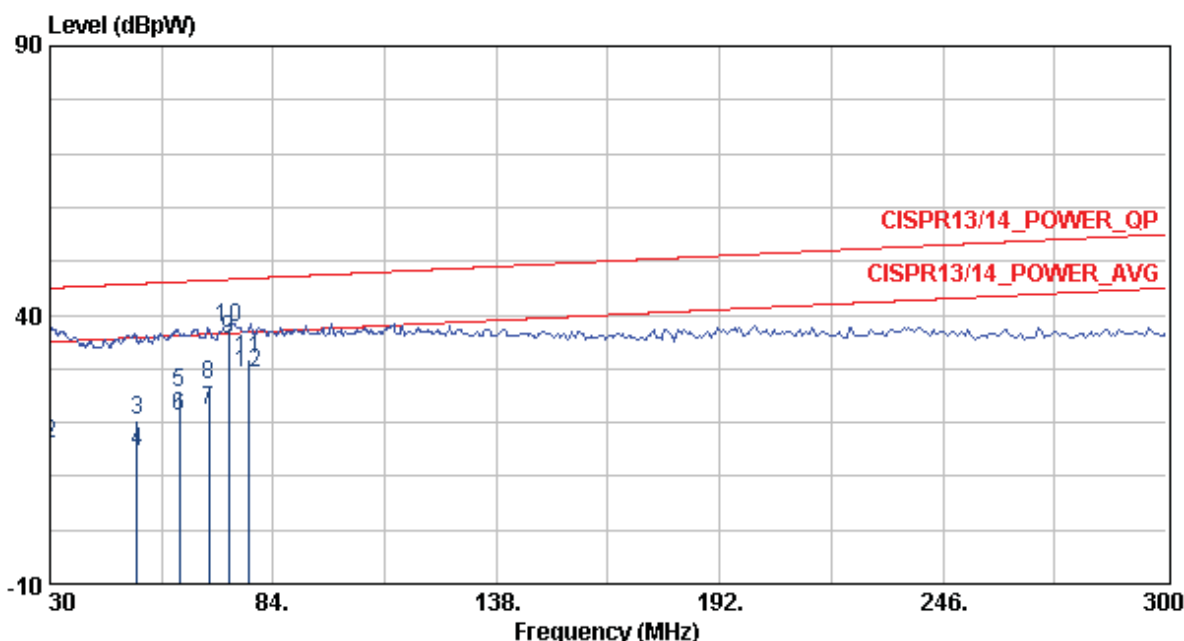
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	cm		
1	30.010	16.02	25.96	-9.94	35.00	-18.98	88	LINE	AVERAGE
2	30.010	21.95	25.96	-4.01	45.00	-23.05	88	LINE	QP
3	37.484	20.70	23.06	-2.36	45.28	-24.58	111	LINE	QP
4	37.484	14.79	23.06	-8.27	35.28	-20.49	111	LINE	AVERAGE
5	60.254	24.09	24.23	-0.14	36.12	-12.03	49	LINE	AVERAGE
6	60.254	27.54	24.23	3.31	46.12	-18.58	49	LINE	QP
7	74.620	34.42	24.50	9.92	36.65	-2.24	212	LINE	AVERAGE
8	74.620	38.64	24.50	14.14	46.65	-8.02	212	LINE	QP
9	78.115	34.51	24.53	9.98	46.78	-12.27	216	LINE	QP
10	78.115	33.41	24.53	8.88	36.78	-3.37	216	LINE	AVERAGE
11	110.350	26.79	24.62	2.17	47.98	-21.19	135	LINE	QP
12	110.350	21.75	24.62	-2.87	37.98	-16.23	135	LINE	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of absorbing clamp.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

Measurement at connecting terminals

Test Mode : Mode 1 Test Voltage : 230V/50Hz
 Tester : Kent Temperature : 27°C
 Humidity : 64%RH Frequency Range : 30MHz~300MHz
 IF Bandwidth : 120kHz Cable : Audio input Cable

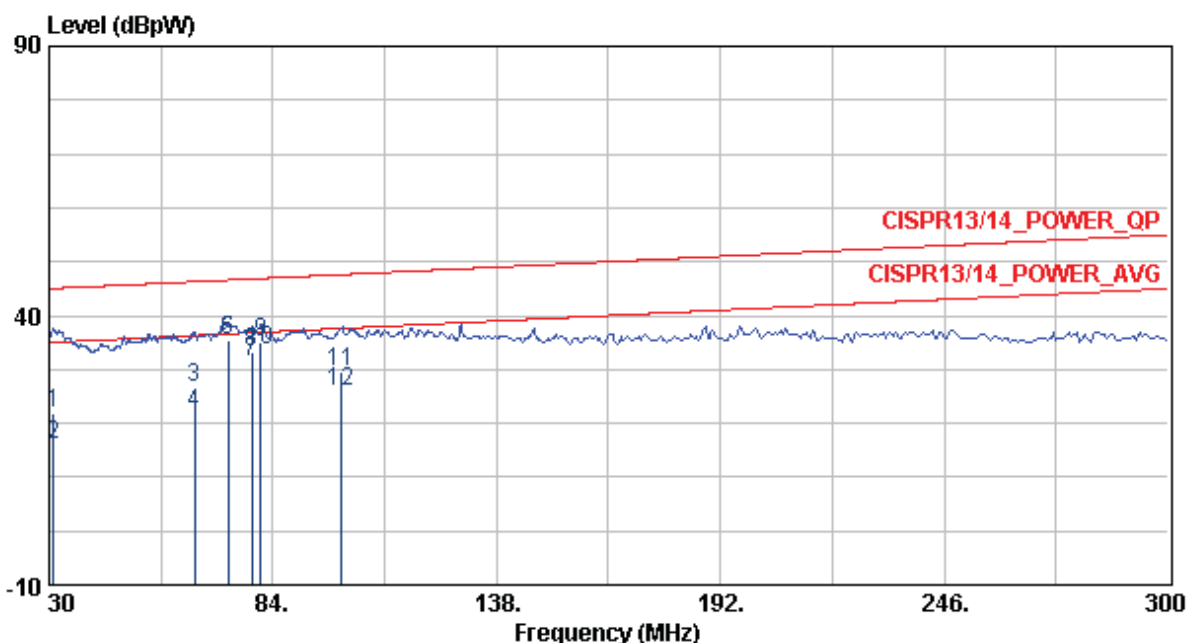


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	cm		
1	30.010	21.95	25.96	-4.01	45.00	-23.05	15	LINE	QP
2	30.010	15.94	25.96	-10.02	35.00	-19.06	15	LINE	AVERAGE
3	51.113	20.57	23.80	-3.23	45.78	-25.21	42	LINE	QP
4	51.113	14.54	23.80	-9.26	35.78	-21.24	42	LINE	AVERAGE
5	61.371	25.59	24.25	1.34	46.16	-20.57	51	LINE	QP
6	61.371	20.97	24.25	-3.28	36.16	-15.19	51	LINE	AVERAGE
7	68.388	22.10	24.41	-2.31	36.42	-14.32	87	LINE	AVERAGE
8	68.388	27.08	24.41	2.67	46.42	-19.34	87	LINE	QP
9	73.296	35.48	24.48	11.00	36.60	-1.12	256	LINE	AVERAGE
10	73.296	37.48	24.48	13.00	46.60	-9.12	256	LINE	QP
11	78.205	31.85	24.53	7.32	46.79	-14.93	63	LINE	QP
12	78.205	29.21	24.53	4.68	36.79	-7.57	63	LINE	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of absorbing clamp.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

Test Mode : Mode 1 **Test Voltage** : 230V/50Hz
Tester : Kent **Temperature** : 27°C
Humidity : 64%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Cable** : Audio output Cable

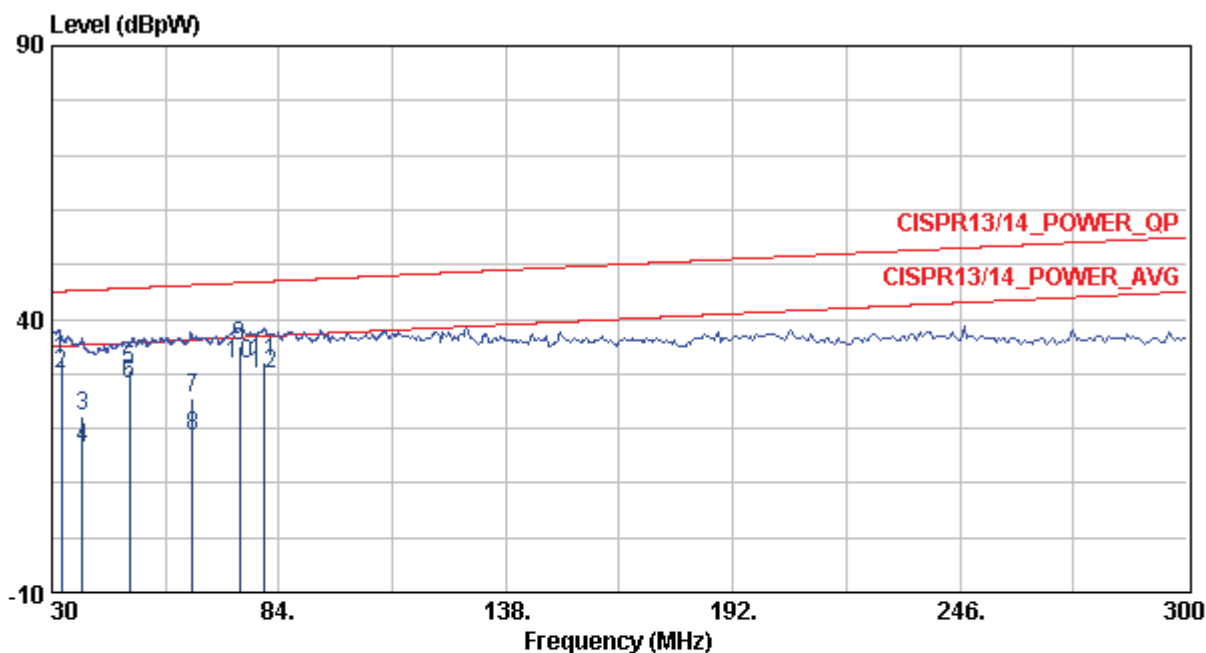


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	cm		
1	31.054	21.89	25.51	-3.62	45.04	-23.15	12	LINE	QP
2	31.054	15.86	25.51	-9.65	35.04	-19.18	12	LINE	AVERAGE
3	65.221	26.67	24.34	2.33	46.30	-19.63	53	LINE	QP
4	65.221	21.93	24.34	-2.41	36.30	-14.37	53	LINE	AVERAGE
5 @	73.284	35.36	24.48	10.88	36.60	-1.24	59	LINE	AVERAGE
6	73.284	35.47	24.48	10.99	46.60	-11.13	59	LINE	QP
7	78.887	31.52	24.54	6.98	36.81	-5.29	221	LINE	AVERAGE
8	78.887	33.22	24.54	8.68	46.81	-13.59	221	LINE	QP
9	80.998	35.02	24.54	10.48	46.89	-11.87	241	LINE	QP
10	80.998	33.54	24.54	9.00	36.89	-3.35	241	LINE	AVERAGE
11	100.284	29.47	24.53	4.94	47.60	-18.13	69	LINE	QP
12	100.284	25.73	24.53	1.20	37.60	-11.87	69	LINE	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of absorbing clamp.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

Test Mode : Mode 1 **Test Voltage** : 230V/50Hz
Tester : Kent **Temperature** : 27°C
Humidity : 64%RH **Frequency Range** : 30MHz~300MHz
IF Bandwidth : 120kHz **Cable** : Speaker output Cable



	Freq	Level	Factor	Read	Limit	Over	Ant		
	MHz	dBpW	dB	Level	Line	Limit	Pos	Pol/Phase	Remark
				dBpW	dBpW	dB	cm		
1	32.270	32.44	25.01	7.43	45.08	-12.65	0	LINE	QP
2	32.270	29.82	25.01	4.81	35.08	-5.27	0	LINE	AVERAGE
3	37.179	22.40	23.17	-0.77	45.27	-22.87	8	LINE	QP
4	37.179	16.28	23.17	-6.89	35.27	-18.99	8	LINE	AVERAGE
5	48.404	30.80	23.52	7.28	45.68	-14.88	6	LINE	QP
6	48.404	28.04	23.52	4.52	35.68	-7.64	6	LINE	AVERAGE
7	63.478	25.38	24.30	1.08	46.24	-20.86	245	LINE	QP
8	63.478	18.66	24.30	-5.64	36.24	-17.58	245	LINE	AVERAGE
9	74.698	34.91	24.50	10.41	46.66	-11.75	0	LINE	QP
10	74.698	31.80	24.50	7.30	36.66	-4.86	0	LINE	AVERAGE
11	80.305	32.20	24.55	7.65	46.86	-14.67	15	LINE	QP
12	80.305	29.85	24.55	5.30	36.86	-7.02	15	LINE	AVERAGE

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of absorbing clamp.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.
4. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the EUT shall be deemed to meet both limits.

4. Harmonic Current Emission Measurement

Test Result : **PASS**

4.1 Limits for Emission Measurement

Limits for Class A equipment

Harmonic order (n) Odd harmonics	Maximum permissible harmonic current (A)	Harmonic order (n) Even Harmonics	Maximum permissible harmonic current (A)
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.3
9	0.40	8 ≤ n ≤ 40	0.23 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 15/n		

Limits for Class B equipment

It shall not exceed the vales give in calss A multiplied by a factor of 1.5.

Limits for Class C equipment

Harmonic order (n)	Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency %
2	2
3	30·λ (λ is the circuit power factor)
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3

Limits for Class D equipment

Harmonic order (n)	Maximum permissible harmonic current per watt (mA/W)	Maximum permissible harmonic current (A)
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See class A

4.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Power Source	California Instrument	5001ix-208/ 56619	Oct. 12, 2011	Oct. 12, 2012
Power Analyzer		PACS-1/ 72398	Oct. 12, 2011	Oct. 12, 2012
Test Software	C.I.	CTS 3.0/ Ver. 3.2.0.18	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

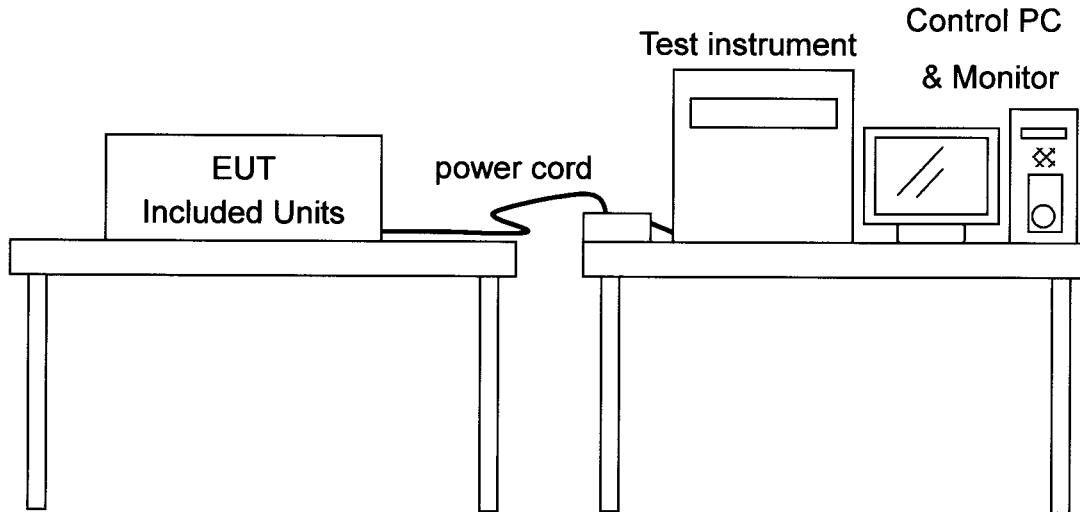
Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

4.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters in the shielded room.
- c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters in the shielded room.
- d. Decide the classification of the EUT as following:
 - Class A** : - balanced three-phase equipment
 - household appliances, excluding equipment identified as class D
 - tools, excluding portable tools
 - dimmers for incandescent lamps
 - audio equipment
 - equipments not specified in one of the three other classes
 - Class B** : - portable tools
 - arc welding equipment which is not professional equipment.
 - Class C** : - lighting equipment
 - Class D** : - Equipment specified power less than or equal to 600W of the following types
 - personal computers and personal computer monitors
 - television receivers
- e. Connects the EUT's power source to the mains power supplied by the test instrument. Turn on the EUT.
- f. Operating the EUT as required and measuring the harmonic current emissions on the current carrying lines of EUT's power source.

4.4 Test Configurations



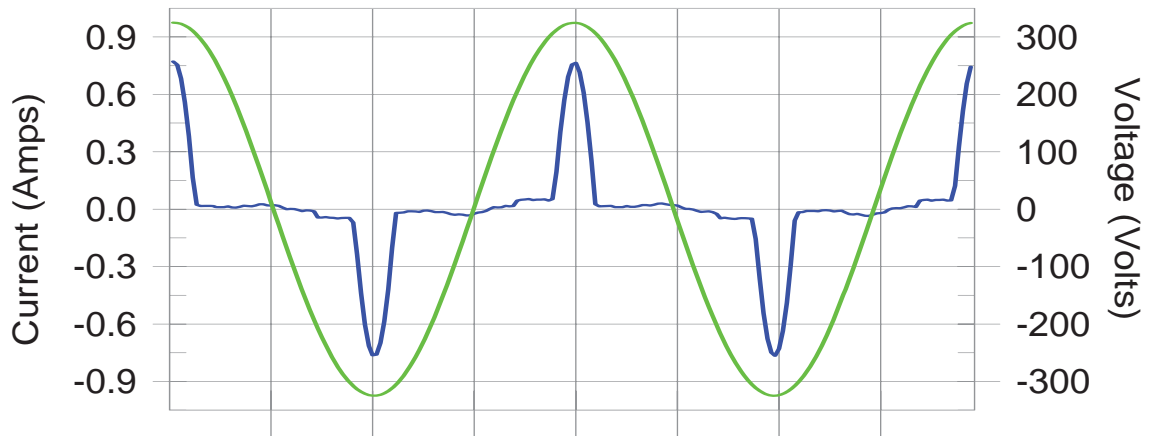
4.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

4.6 Test Results

Test Mode : Mode 1
Tester : Mathew
Temperature : 29°C
Humidity : 58%RH

TEST FREQ	50
TEST VOLTS	230
TEST TIME	2.5 Minutes
MAX WATTS	19.4 W



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

Test Raw Data:

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	0.2	0.002	1.620	0.12	N/L
3	0.128	2.300	5.6	0.128	3.450	3.71	N/L
4	0.001	0.430	0.3	0.001	0.645	0.21	N/L
5	0.107	1.140	9.4	0.107	1.710	6.28	N/L
6	0.001	0.300	0.2	0.001	0.450	0.13	N/L
7	0.080	0.770	10.4	0.080	1.155	6.94	N/L
8	0.001	0.230	0.2	0.001	0.345	0.17	N/L
9	0.055	0.400	13.8	0.055	0.600	9.19	N/L
10	0.000	0.184	0.0	0.000	0.276	0.13	N/L
11	0.027	0.330	8.2	0.027	0.495	5.46	N/L
12	0.000	0.153	0.0	0.000	0.230	0.19	N/L
13	0.007	0.210	3.5	0.007	0.315	2.36	N/L
14	0.000	0.131	0.0	0.000	0.197	0.16	N/L
15	0.004	0.150	2.7	0.004	0.225	1.85	N/L
16	0.000	0.115	0.0	0.000	0.173	0.20	N/L
17	0.010	0.132	7.8	0.010	0.199	5.17	N/L
18	0.000	0.102	0.0	0.000	0.153	0.23	N/L
19	0.011	0.118	9.2	0.011	0.178	6.13	N/L
20	0.000	0.092	0.0	0.000	0.138	0.21	N/L
21	0.007	0.107	6.1	0.007	0.161	4.09	N/L
22	0.000	0.084	0.0	0.000	0.125	0.19	N/L
23	0.002	0.098	2.1	0.002	0.147	1.41	N/L
24	0.000	0.077	0.0	0.000	0.115	0.24	N/L
25	0.002	0.090	2.0	0.002	0.135	1.36	N/L
26	0.000	0.071	0.0	0.000	0.106	0.24	N/L
27	0.004	0.083	4.4	0.004	0.125	2.96	N/L
28	0.000	0.066	0.0	0.000	0.099	0.28	N/L
29	0.004	0.078	5.5	0.004	0.116	3.72	N/L
30	0.000	0.061	0.0	0.000	0.092	0.31	N/L
31	0.003	0.073	3.5	0.003	0.109	2.33	N/L
32	0.000	0.058	0.0	0.000	0.086	0.29	N/L
33	0.001	0.068	1.3	0.001	0.102	0.87	N/L
34	0.000	0.054	0.0	0.000	0.081	0.26	N/L
35	0.001	0.064	2.1	0.001	0.096	1.41	N/L
36	0.000	0.051	0.0	0.000	0.077	0.31	N/L
37	0.002	0.061	3.1	0.002	0.091	2.10	N/L
38	0.000	0.048	0.0	0.000	0.073	0.32	N/L
39	0.002	0.058	3.8	0.002	0.087	2.56	N/L
40	0.000	0.046	0.0	0.000	0.069	0.27	N/L

5. Voltage Fluctuations and Flickers Emission Measurement

Test Result : **PASS**

5.1 Limits for Emission Measurement

- the short-term flicker indicator, P_{st} , shall not be greater than 1.0;
- the long-term flicker indicator, P_{lt} , shall not be greater than 0.65;
- the relative steady-state voltage change, d_c , shall not exceed 3.3%;
- the voltage change with time, $d(t)$, during a voltage change shall not exceed 3.3% for more than 500ms.
- the maximum relative voltage change, d_{max} , shall not exceed
 - a) 4% without additional conditions;
 - b) 6% for equipment which is switched manually
 - c) 7% for equipment which is attended whilst in use

5.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Power Source	California Instrument	5001ix-208/ 56619	Oct. 12, 2011	Oct. 12, 2012
Power Analyzer		PACS-1/ 72398	Oct. 12, 2011	Oct. 12, 2012
Test Software	C.I.	CTS 3.0/ Ver. 3.2.0.18	NCR	NCR
TR7 shielded room	ETS. LINDGREN	TR7/ 15353-D	NCR	NCR

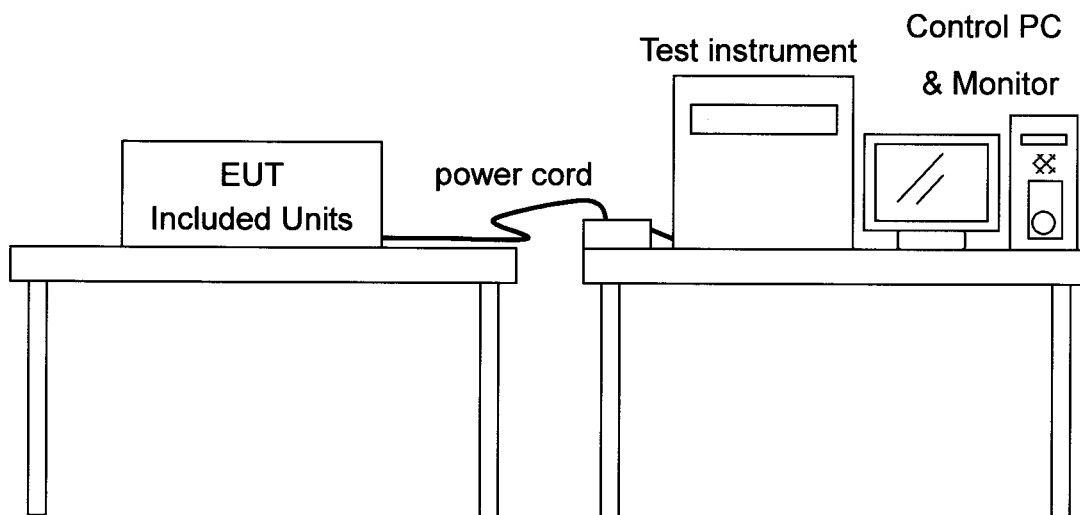
Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

5.3 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters in the shielded room.
- c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters in the shielded room.
- d. Decide the type of EUT to define the d_{max} limit and its corresponding test methods described in the relative standard.
- e. Maintain the supply voltage to be $\pm 2\%$ of the EUT's rated voltage and also the frequency to be $50\text{Hz} \pm 0.5\%$.
- f. Verify the total harmonic distortion of the supply voltage to be less than 3%.
- g. Connects the EUT's power source to the mains power supplied by the test instrument.
- h. Operating the EUT as required and measuring the voltage fluctuation and flickers of EUT's power source.
- i. Verify the fluctuations of the test supply voltage to be less than 0.4 before and after the test.

5.4 Test Configurations



5.5 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

5.6 Test Results

Test Mode : Mode 1
Tester : Mathew
Temperature : 29°C
Humidity : 58%RH

TEST FREQ	50	
TEST VOLTS	230	
TEST TIME	10 Minutes	
	EUT Data	Limit
d(t)>3.3% (ms)	0	500
d _c (%)	0	3.3
d _{max} (%)	0	4
P _{st} max	0.064	1
P _{lt} max	0.028	0.65



6. Immunity Against RFI Voltage(S2a)

Test Result : **PASS**

6.1 Limits for Immunity Measurement

Limits of immunity to RF voltages of mains, loudspeaker and headphone terminals

Frequency (MHz)	Level dB(μ V) (e.m.f.)
0.15 to 30	130
30 to 100	120
100 to 150	120 – 110 ^a

^a Decreasing linearly with the logarithm of the frequency.

Limits of immunity to RF voltages of audio input and output terminals (except loudspeaker and headphone terminals)

Frequency (MHz)	Level dB(μ V) (e.m.f.)
0.15 to 1.6	80 – 90 ^a
1.6 to 20	90 – 120 ^a
20 to 100	120
100 to 150	120 – 110 ^b

^a Increasing linearly with the logarithm of the frequency.
^b Decreasing linearly with the logarithm of the frequency.

Tester : Jacky Kao
Ambient Temperature : 25°C
Relative Humidity : 45%
Atmospheric Pressure : 1013mbar

6.2 Description of Performance Criteria

Performance criterion A

The equipment shall continue to operate as intended during the test. No change of actual operating state (for example change of channel) is allowed as a result of the application of the test. Multifunction equipment shall for each function meet the relevant requirements. Evaluation is carried out for audio and video functions. The equipment is supposed to operate as intended if the criteria of "Evaluation of audio quality" and/or "Evaluation of picture quality" are fulfilled.

Performance criterion B

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended, but failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

6.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCI/ 100316	Feb. 16, 2011	Feb. 16, 2012
Signal Generator	R&S	SML01/ 104230	Dec. 15, 2011	Dec. 15, 2013
Signal Generator	R&S	SML02/ 101519	Dec. 15, 2011	Dec. 15, 2013
Audio Analyzer	R&S	UPL/ 101285	Dec. 16, 2011	Dec. 16, 2013
Power Amplifier	R&S	BSA 1515-25/ 055966-5	Dec. 16, 2011	Dec. 16, 2013
TV Test Transmitter	R&S	SFQ/ 100565	Dec. 14, 2011	Dec. 14, 2013
TV Test Transmitter	R&S	SFM/ 100182	Dec. 14, 2011	Dec. 14, 2013
TV Generator SECAM	R&S	SGSF/ 100062	Dec. 19, 2011	Dec. 19, 2013
TV Generator NTSC	R&S	SGMF/ 100043	Dec. 19, 2011	Dec. 19, 2013
TV Generator PAL	R&S	SGPF/ 100160	Dec. 19, 2011	Dec. 19, 2013
MPEG2 Measurement Generator	R&S	DVG/ 100403	Dec. 19, 2011	Dec. 19, 2013
Power Meter	R&S	NRVD/ 837333/066	Dec. 3, 2011	Dec. 3, 2012
RF Probe	R&S	URV5-Z4/ 100121	Oct. 15, 2011	Oct. 15, 2012
Test Software	R&S	T80-K1 V2.1	NCR	NCR
TR20 shielded room	ETS LINDGREN	TR20/ 17873-2	NCR	NCR

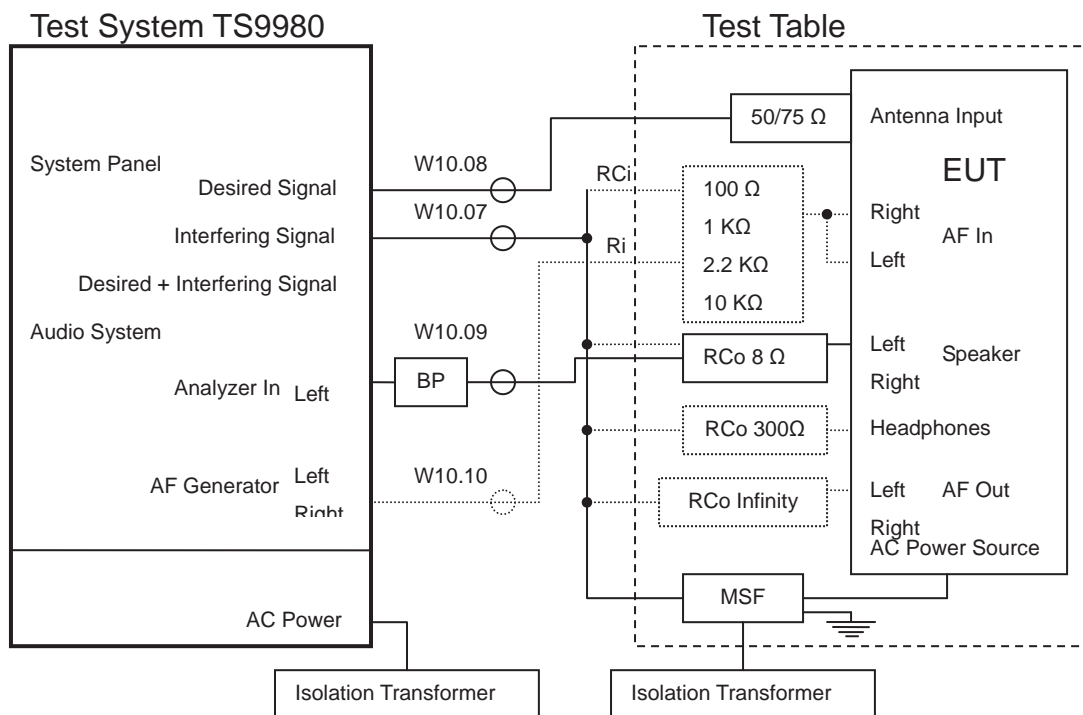
Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

6.4 Test Procedures

- a. Network R_{Ci} matches the RF disturbance source to the input impedance of the relevant audio terminal and a similar network R_{Co} is used to match the output terminals.
- b. A mains stopfilter MSF is used to inject the unwanted signal at the mains terminal and acts as a stopfilter for unwanted signals from the mains network.
- c. The EUT is placed 0.1m above the center of a metal ground plane of dimensions 2m by 1m.
- d. The mains lead is bundled to a length less than 0.3m and connected to the mains stop filter MSF.
- e. The ground connection of the mains filter(MSF) is directly connected to the metal table.
- f. All unused input/output connections on the EUT are terminated with the proper resistance.
- g. The power supplied to the test system and to the mains filter (MSF) is attached to an isolation transformer.
- h. The 50ohm RF carrier signal is connected from the test system via a 50/75 ohm matching pad (RAM) to the EUT.
- i. The measurements are performed with test software T80-K1 Ver. 2.1.

6.5 Test Configurations



6.6 Photographs of the Test Configurations

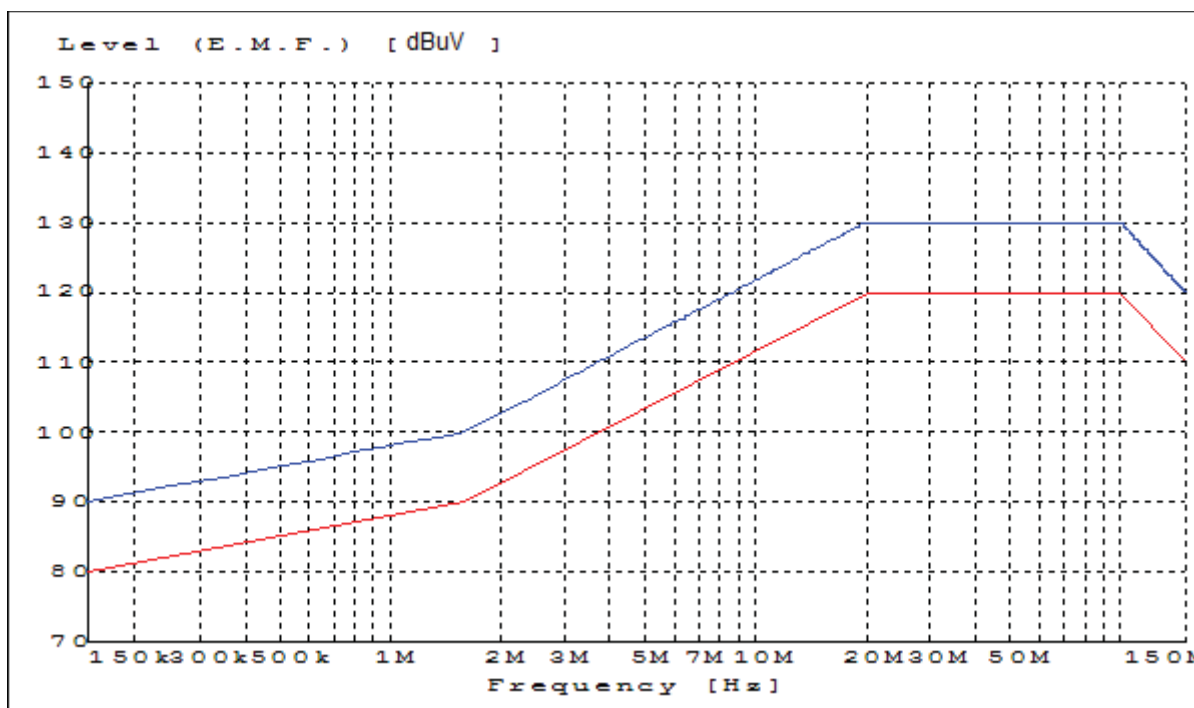
Please refer to the Attachment 1 of the present report.

6.7 Test Results

Test: Immunity Conducted Voltages S2a

Test Mode:	Amplifier -	Monitor:	Speaker Out8 L
Operating Mode:	Audio In	S/N:	58.6 dB
Frequency:	-	AF Level:	59.4 mW

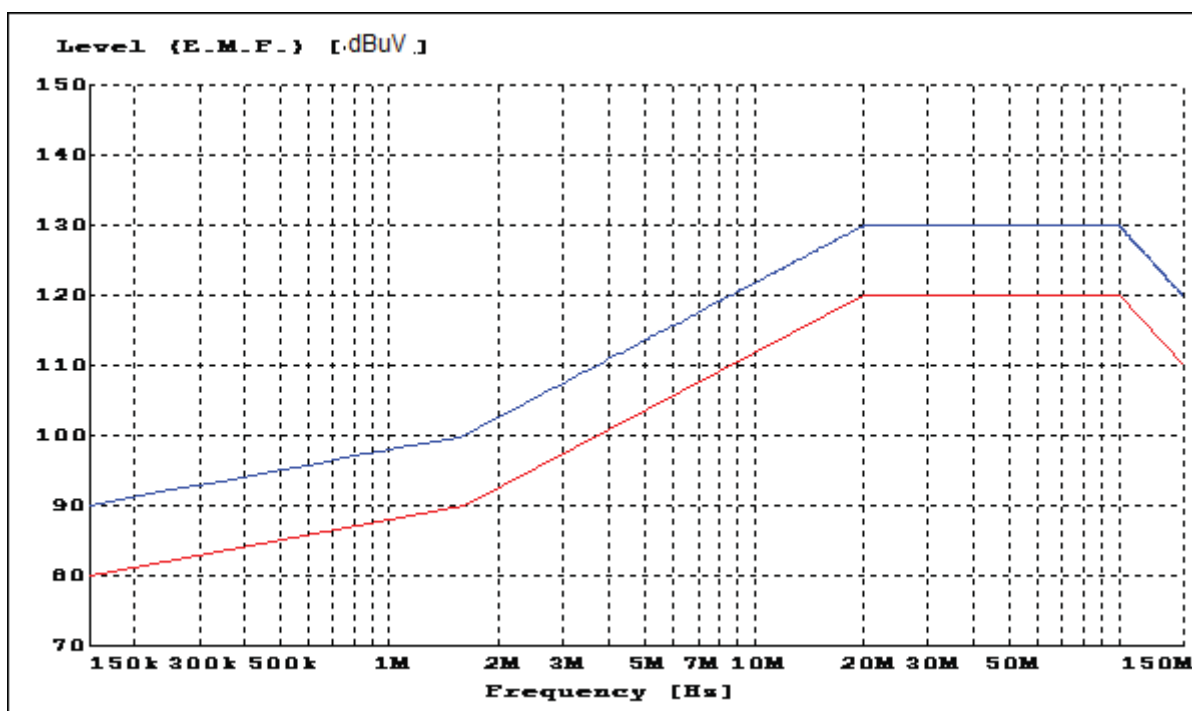
Interf. Signal: Audio In8 L



Test Mode: Amplifier -
Operating Mode: Audio In
Frequency: -

Monitor: Speaker Out8 L
S/N: 58.2 dB
AF Level: 59.6 mW

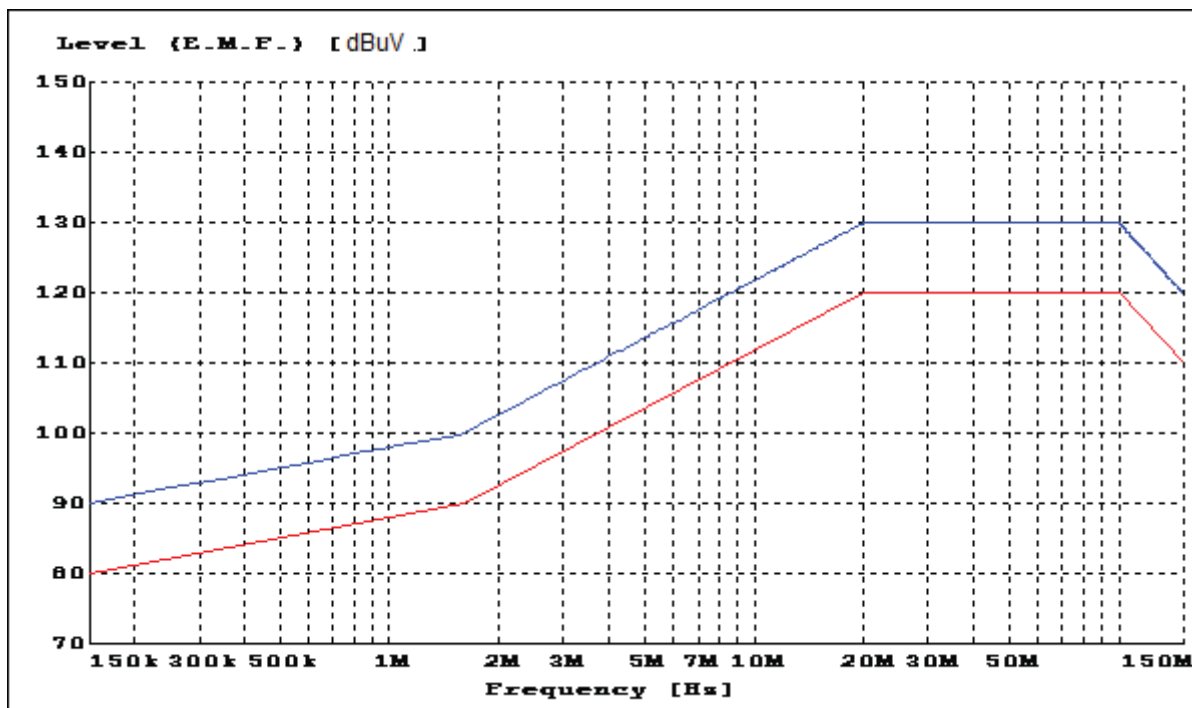
Interf. Signal: Audio In8 R



Test Mode: Amplifier -
Operating Mode: Audio In
Frequency: -

Monitor: Speaker Out8 L
S/N: 58.2 dB
AF Level: 59.6 mW

Interf. Signal: Audio Out8 L



Test Mode: Amplifier -

Monitor: Speaker Out8 L

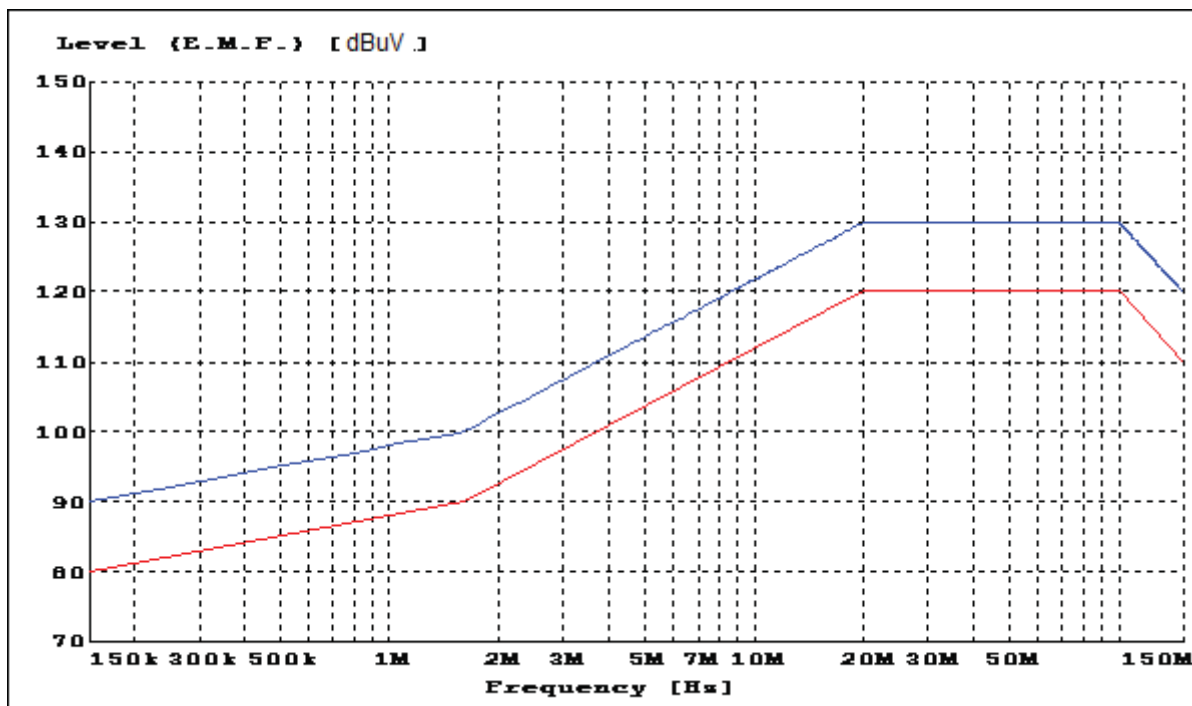
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 59.6 mW

Interf. Signal: Audio Out8 R



Test Mode: Amplifier -

Monitor: Speaker Out8 L

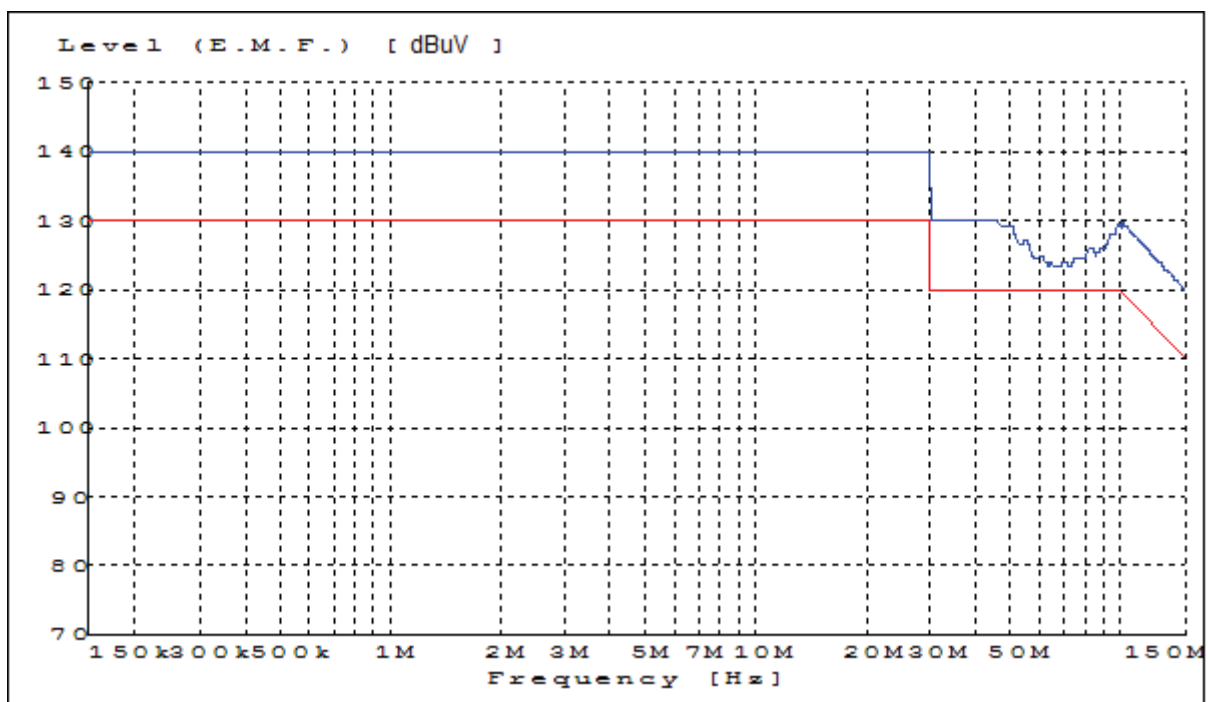
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 59.6 mW

Interf. Signal: Speaker Out8 L



Test Mode: Amplifier -

Monitor: Speaker Out8 L

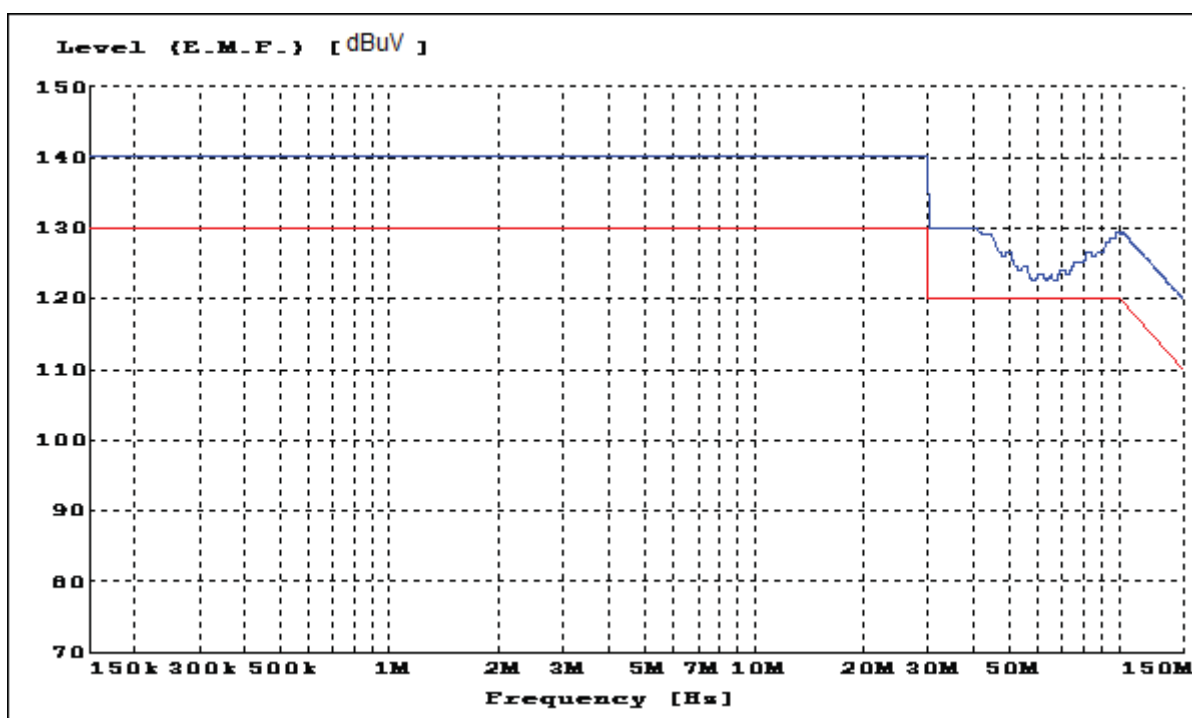
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 59.6 mW

Interf. Signal: Speaker Out8 R



Test Mode: Amplifier -

Monitor: Speaker Out8 L

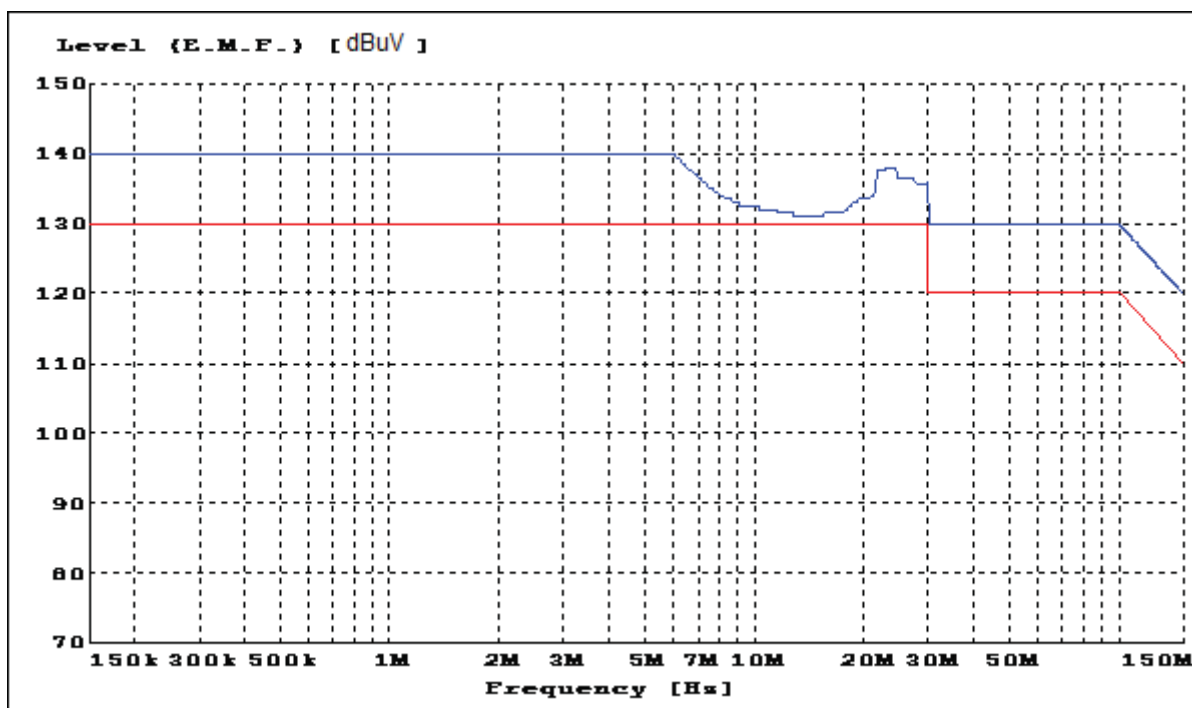
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 59.7 mW

Interf. Signal: Mains



Test: Immunity Conducted Voltages S2a

Test Mode: Amplifier -

Monitor: Speaker Out8 R

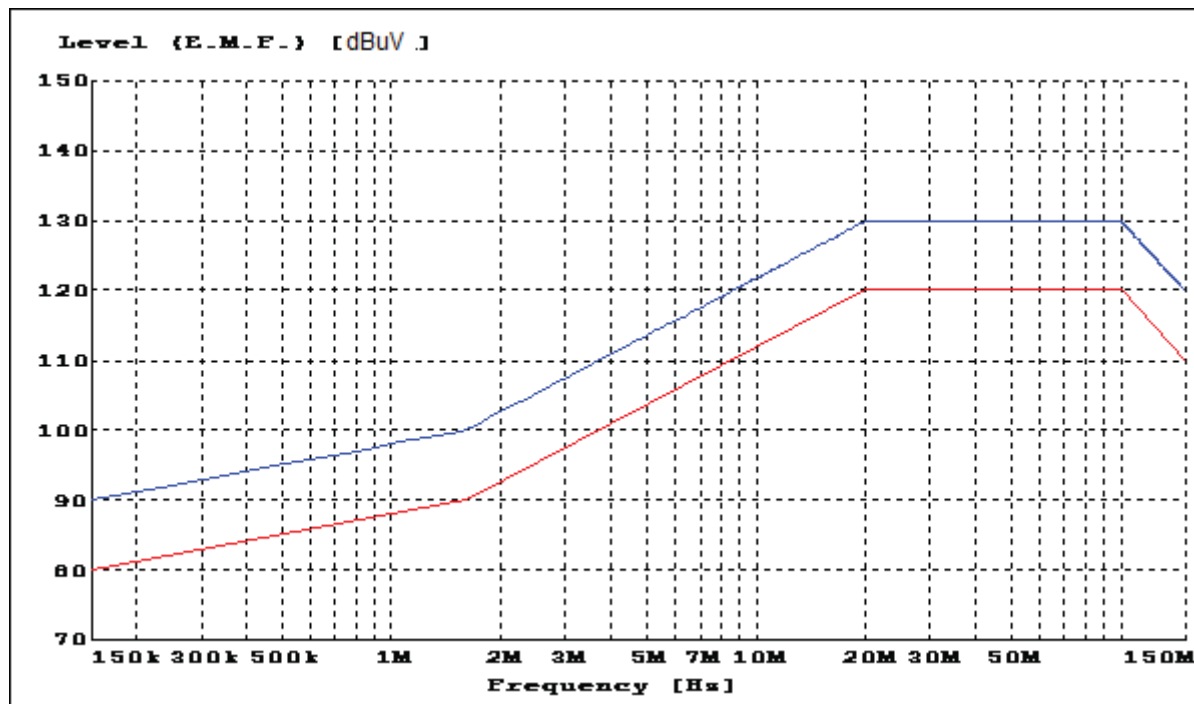
Operating Mode: Audio In

S/N: 58.0 dB

Frequency: -

AF Level: 56.4 mW

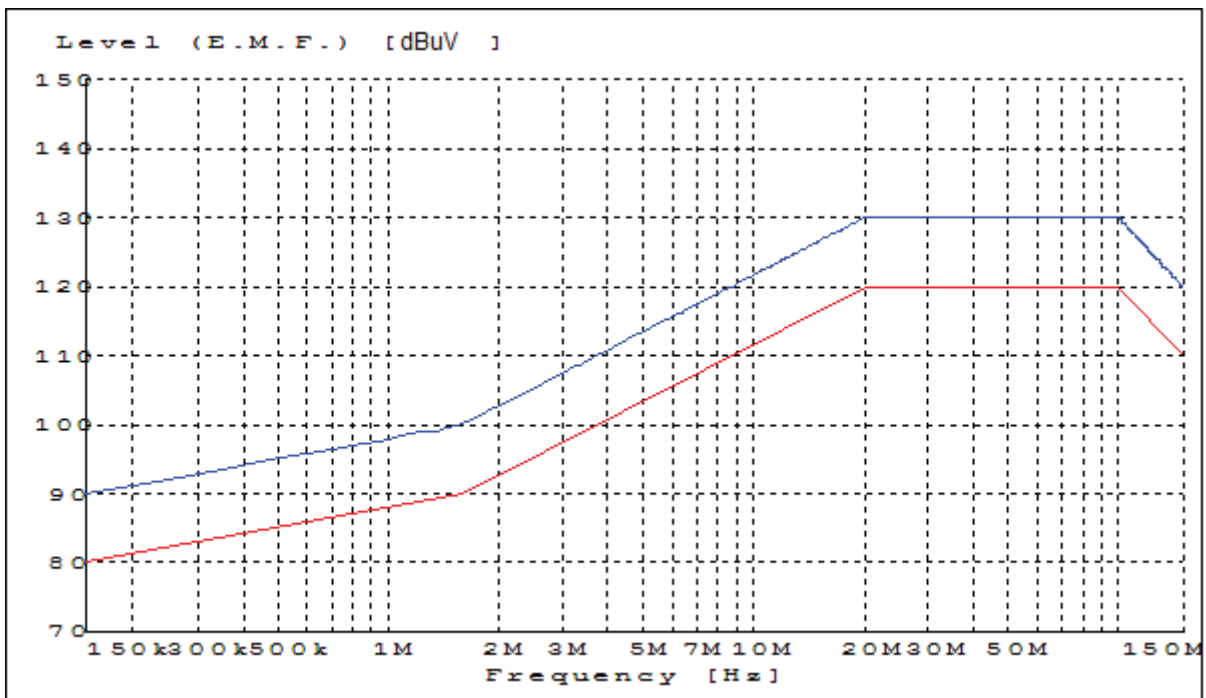
Interf. Signal: Audio In8 L



Test Mode: Amplifier -
Operating Mode: Audio In
Frequency: -

Monitor: Speaker Out8 R
S/N: 58.0 dB
AF Level: 56.4 mW

Interf. Signal: Audio In8 R



Test Mode: Amplifier -

Monitor: Speaker Out8 R

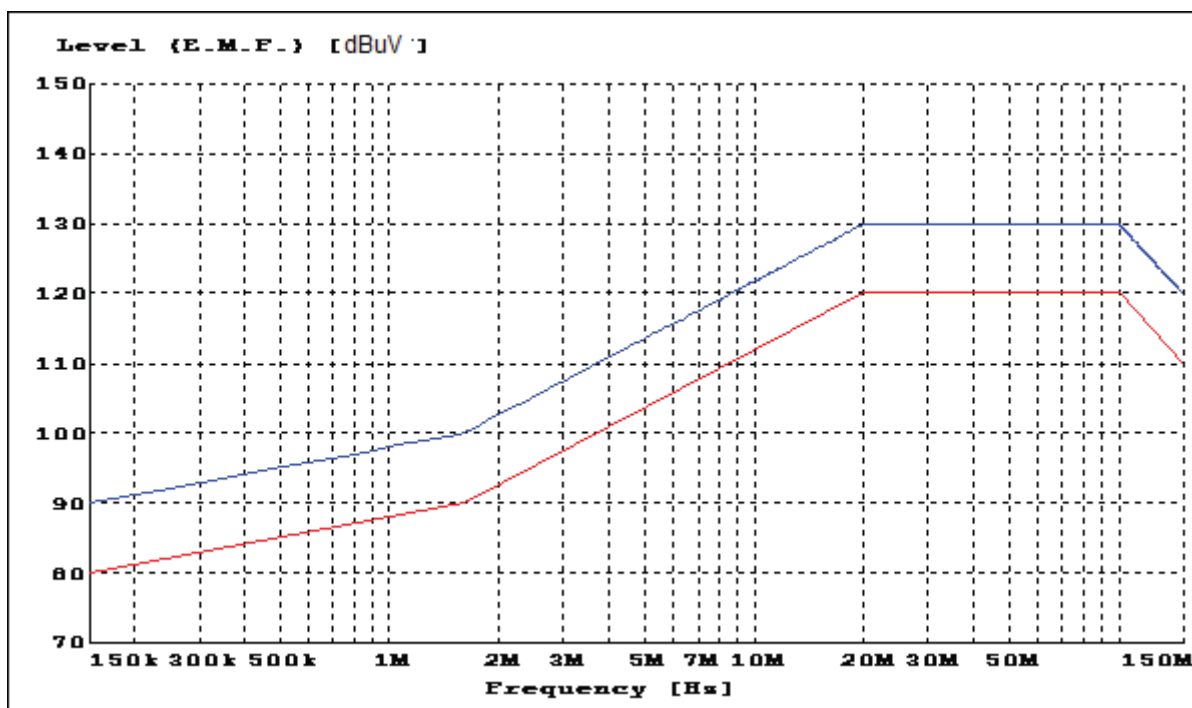
Operating Mode: Audio In

S/N: 58.0 dB

Frequency: -

AF Level: 56.4 mW

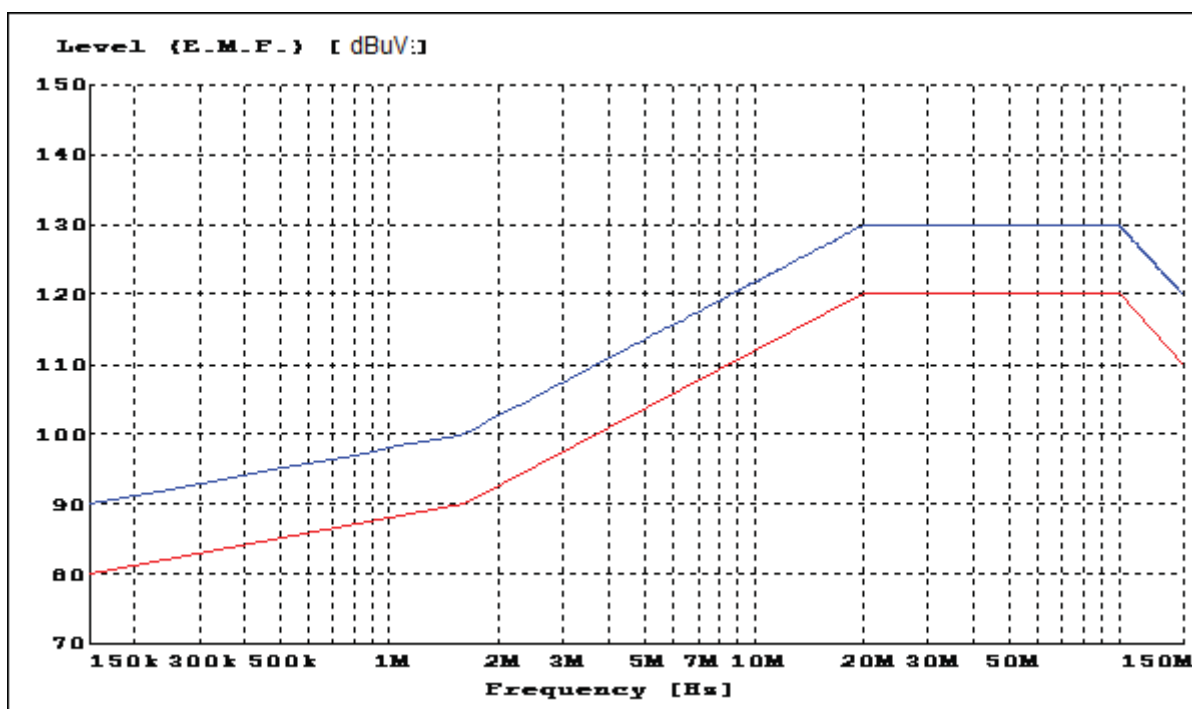
Interf. Signal: Audio Out8 L



Test Mode: Amplifier -
Operating Mode: Audio In
Frequency: -

Monitor: Speaker Out8 R
S/N: 58.0 dB
AF Level: 56.4 mW

Interf. Signal: Audio Out8 R



Test Mode: Amplifier -

Monitor: Speaker Out8 R

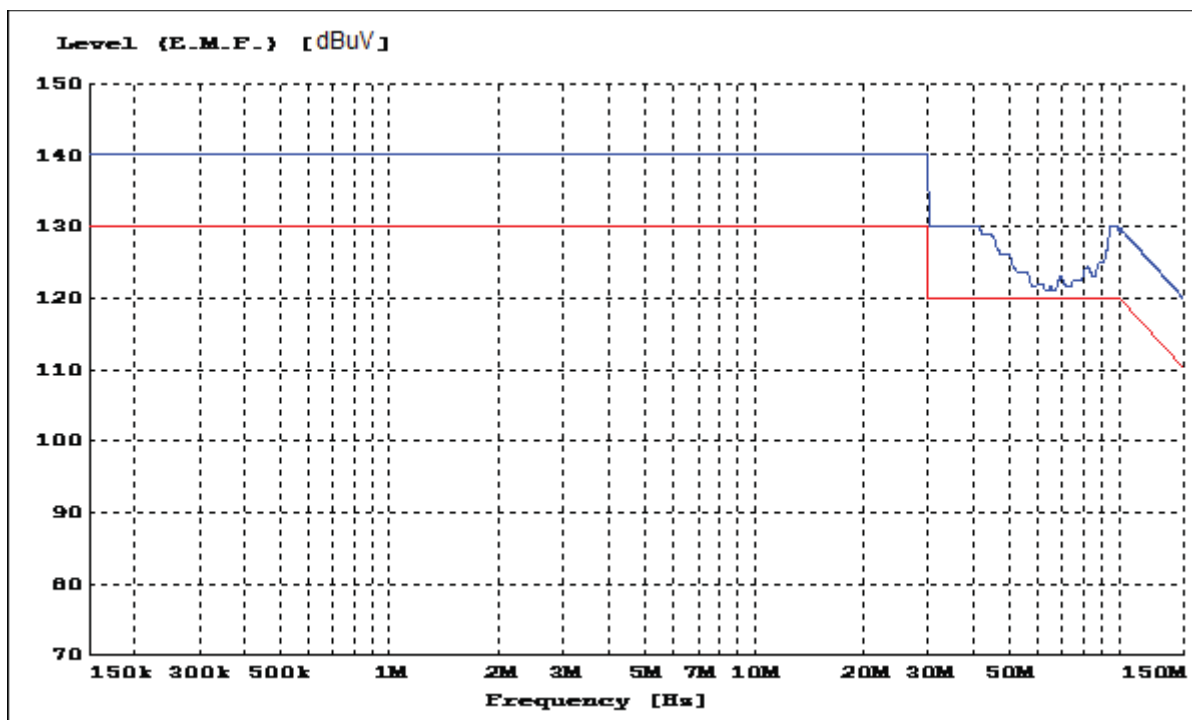
Operating Mode: Audio In

S/N: 69.1 dB

Frequency: -

AF Level: 59.5 mW

Interf. Signal: Speaker Out8 L



Test Mode: Amplifier -

Monitor: Speaker Out8 R

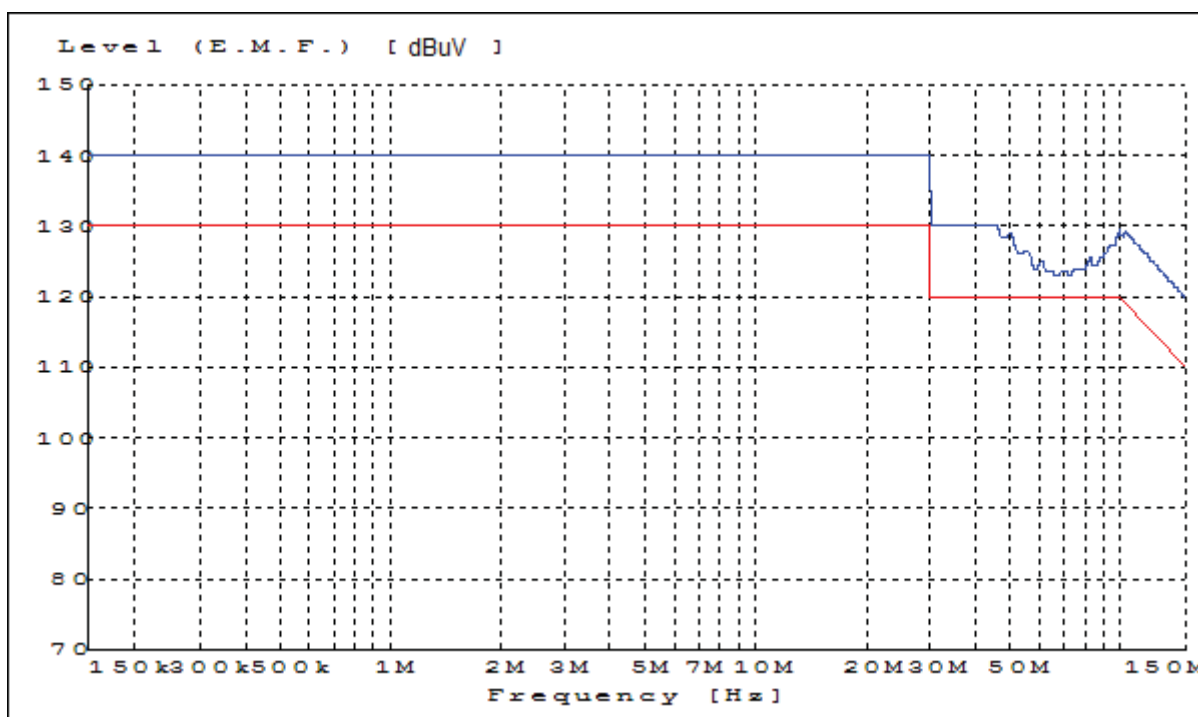
Operating Mode: Audio In

S/N: 69.1 dB

Frequency: -

AF Level: 59.5 mW

Interf. Signal: Speaker Out8 R



Test Mode: Amplifier -

Monitor: Speaker Out8 R

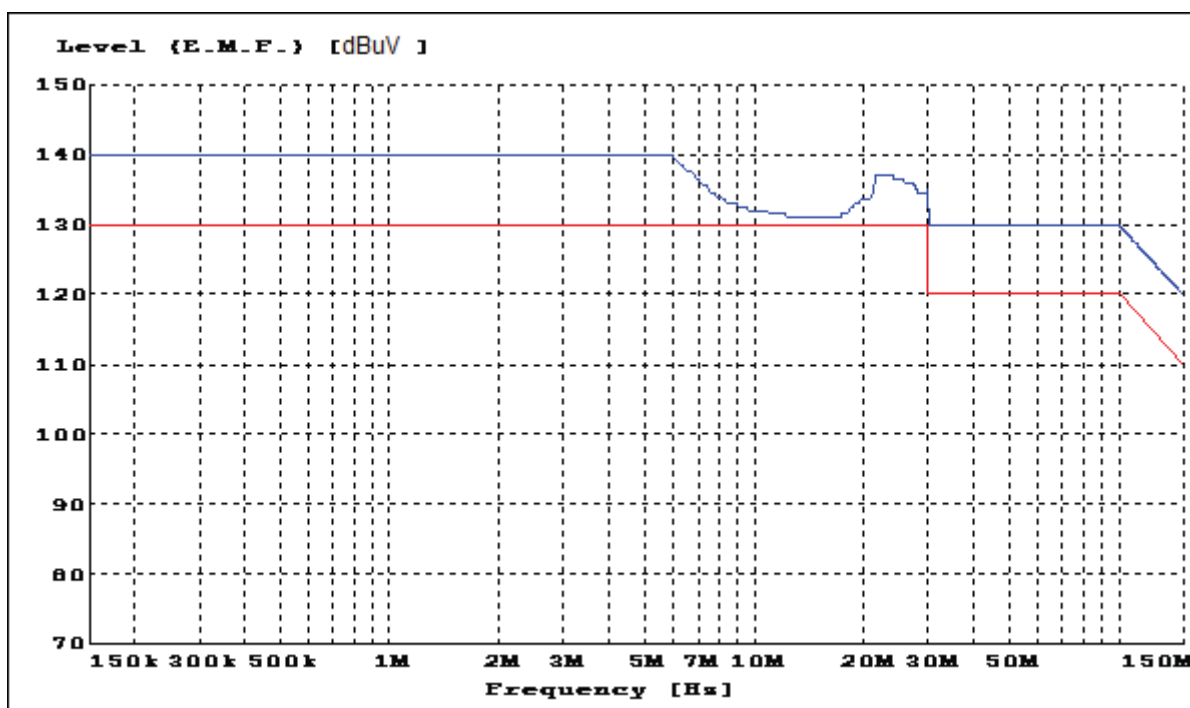
Operating Mode: Audio In

S/N: 58.0 dB

Frequency: -

AF Level: 56.4 mW

Interf. Signal: Mains



7. Immunity Against Radiated RFI (S3)

7.1 Limits for Immunity Measurement

Limits of immunity to ambient electromagnetic fields of television receivers operating in the reception function

Frequency (MHz)	Level dB(μ V/m)
0.15 to 47 Except frequency bands: $(f_c - 1.5)$ to $(f_c + 1.5)$ $(f_s - 0.5)$ to $(f_s + 0.5)$ $(f_i - 2)$ to $(f_v + 2)$ ^a $(f_v - 2)$ to $(f_i + 2)$ ^b	125 101 101 101 101
For non-European countries and Russia 47 to 150 ^c Except the tuned channel ± 0.5	109 ^d
For European countries 47 to 87 87 to 108 108 to 144 144 to 150 Except the tuned channel ± 0.5	109 125 109 125
Note- f_i is the sound intermediate frequency f_v is the vision intermediate frequency f_s is the intercarrier sound frequency f_c is the colour subcarrier frequency	
a. For systems B, D, G, K, I, L, M. b. Only for system L'. c. The frequency 47 MHz can be varied on a national basis depending on the use of this frequency range. d. For television receivers with reception function in this frequency range. For television receivers without reception function in this frequency range a level of 125 dB(μ V/m) shall apply.	

Tester : Jacky Kao

Ambient Temperature : 24°C

Relative Humidity : 50%

Atmospheric Pressure : 1015mbar

7.2 Description of Performance Criteria

Performance criterion A

The equipment shall continue to operate as intended during the test. No change of actual operating state (for example change of channel) is allowed as a result of the application of the test. Multifunction equipment shall for each function meet the relevant requirements. Evaluation is carried out for audio and video functions. The equipment is supposed to operate as intended if the criteria of "Evaluation of audio quality" and/or "Evaluation of picture quality" are fulfilled.

Performance criterion B

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended, but failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

7.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCI/ 100316	Feb. 16, 2011	Feb. 16, 2012
Signal Generator	R&S	SML01/ 104230	Dec. 15, 2011	Dec. 15, 2013
Signal Generator	R&S	SML02/ 101519	Dec. 15, 2011	Dec. 15, 2013
Audio Analyzer	R&S	UPL/ 101285	Dec. 16, 2011	Dec. 16, 2013
Power Amplifier	R&S	BSA 1515-25/ 055966-5	Dec. 16, 2011	Dec. 16, 2013
TV Test Transmitter	R&S	SFQ/ 100565	Dec. 14, 2011	Dec. 14, 2013
TV Test Transmitter	R&S	SFM/ 100182	Dec. 14, 2011	Dec. 14, 2013
TV Generator SECAM	R&S	SGSF/ 100062	Dec. 19, 2011	Dec. 19, 2013
TV Generator NTSC	R&S	SGMF/ 100043	Dec. 19, 2011	Dec. 19, 2013
TV Generator PAL	R&S	SGPF/ 100160	Dec. 19, 2011	Dec. 19, 2013
MPEG2 Measurement Generator	R&S	DVG/ 100403	Dec. 19, 2011	Dec. 19, 2013
Power Meter	R&S	NRVD/ 837333/066	Dec. 3, 2011	Dec. 3, 2012
RF Probe	R&S	URV5-Z4/ 100121	Oct. 15, 2011	Oct. 15, 2012
Test Software	R&S	T80-K1 V2.1	NCR	NCR
TR20 shielded room	ETS LINDGREN	TR20/ 17873-2	NCR	NCR

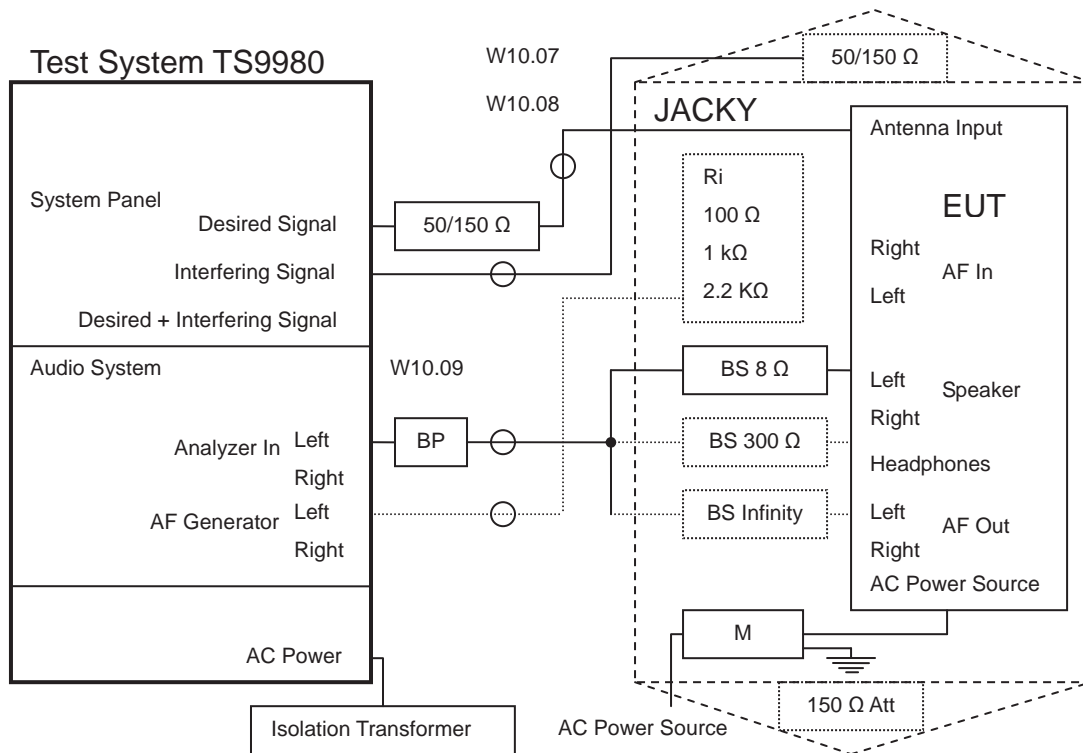
Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

7.4 Test Procedures

- a. The EUT is placed on a non-metallic support, 0.1m high, in the center of the stripline.
- b. The wanted signal is fed to all input terminals respectively. The unwanted signal is fed to a matching network of the stripline.
- c. The ground connection of the mains filter(M) is directly connected to the JACKY.
- d. All unused input/output connections on the EUT are terminated and shielded with the proper resistance.
- e. The power supply to the mains of the EUT is attached to the mains filter(M).
- f. The measurements were performed with test software T80-K1 Ver. 2.1.

7.5 Test Configurations



7.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

7.7 Test Results

Test: Immunity Radiated Fields S3

Test Mode: Amplifier -

Monitor: Speaker Out8 L

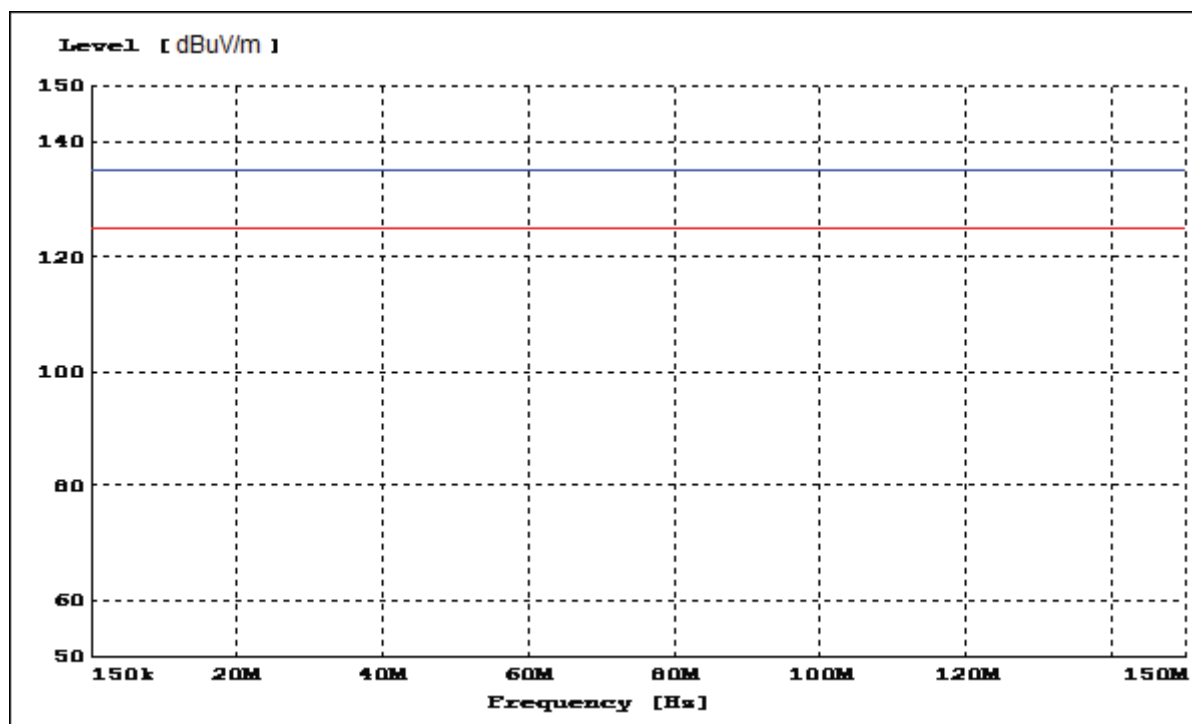
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 52.1 mW

Interf. Signal: Scan, K2 = 1.6 dB



Test Mode: Amplifier -

Monitor: Speaker Out8 R

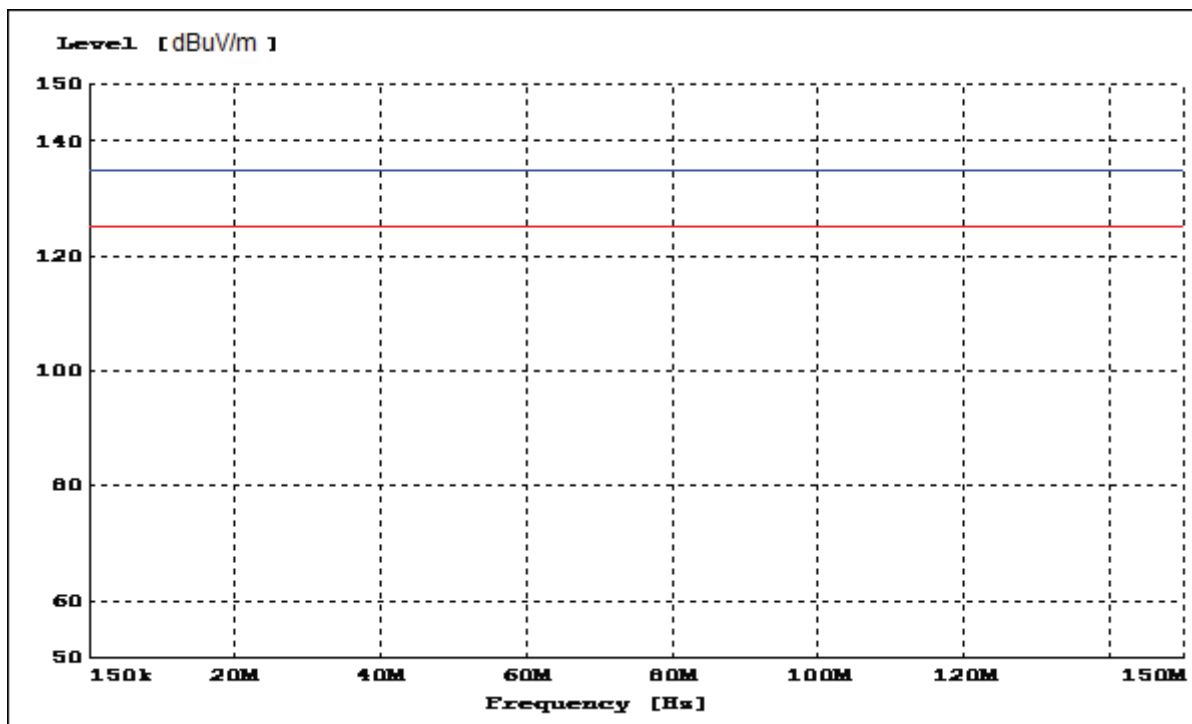
Operating Mode: Audio In

S/N: 58.2 dB

Frequency: -

AF Level: 53.7 mW

Interf. Signal: Scan, K2 = 1.6 dB



8. Keyed Carrier(S5)**Test Result : PASS****8.1 Limits for Immunity Measurement**

Frequency (MHz)	Level dB(μV)/m
900	130

Tester : Jacky Kao**Ambient Temperature : 26°C****Relative Humidity : 53%****Atmospheric Pressure : 1016mbar**

8.2 Description of Performance Criteria

Performance criterion A

The equipment shall continue to operate as intended during the test. No change of actual operating state (for example change of channel) is allowed as a result of the application of the test. Multifunction equipment shall for each function meet the relevant requirements. Evaluation is carried out for audio and video functions. The equipment is supposed to operate as intended if the criteria of “Evaluation of audio quality” and/or “Evaluation of picture quality” are fulfilled.

Performance criterion B

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended, but failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

8.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Signal Generator	R&S	SML01/ 104230	Dec. 15, 2011	Dec. 15, 2013
Signal Generator	R&S	SML02/ 101519	Dec. 15, 2011	Dec. 15, 2013
Audio Analyzer	R&S	UPL/ 101285	Dec. 16, 2011	Dec. 16, 2013
TV Test Transmitter	R&S	SFQ/ 100565	Dec. 14, 2011	Dec. 14, 2013
TV Test Transmitter	R&S	SFM/ 100182	Dec. 14, 2011	Dec. 14, 2013
TV Generator SECAM	R&S	SGSF/ 100062	Dec. 19, 2011	Dec. 19, 2013
TV Generator NTSC	R&S	SGMF/ 100043	Dec. 19, 2011	Dec. 19, 2013
TV Generator PAL	R&S	SGPF/ 100160	Dec. 19, 2011	Dec. 19, 2013
MPEG2 Measurement Generator	R&S	DVG/ 100403	Dec. 19, 2011	Dec. 19, 2013
50/75 Ohm Matching Pad	MINI-CIRCUITS	UNMD-5075/ 3 0605	Feb. 2, 2011	Feb. 2, 2012
Power Meter	R&S	NRVD/ 837333/066	Dec. 3, 2011	Dec. 3, 2012
RF Probe	R&S	URV5-Z4/ 100121	Oct. 15, 2011	Oct. 15, 2012
Dual Directional Coupler	AR	DC6180/ 28730	Dec. 26, 2011	Dec. 26, 2012
Power Amplifier	AR	150W1000/ 29167	NCR	NCR
Bi-Log Antenna	EMCO	3142B/ 1716	NCR	NCR
Isotropic E Field Probe	AR	FL7006/ 0336500	April 13, 2011	April 13, 2012
Dual Channel Power Meter	R&S	NRVD/ 100499	Dec. 26, 2011	Dec. 26, 2012

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Software	R&S	T80-K1/ Ver. 2.1	NCR	NCR
TR2 fully-anechoic chamber	ETS. LINDGREN	TR2/ 15353-R	Sept. 24, 2011	Sept. 24, 2012

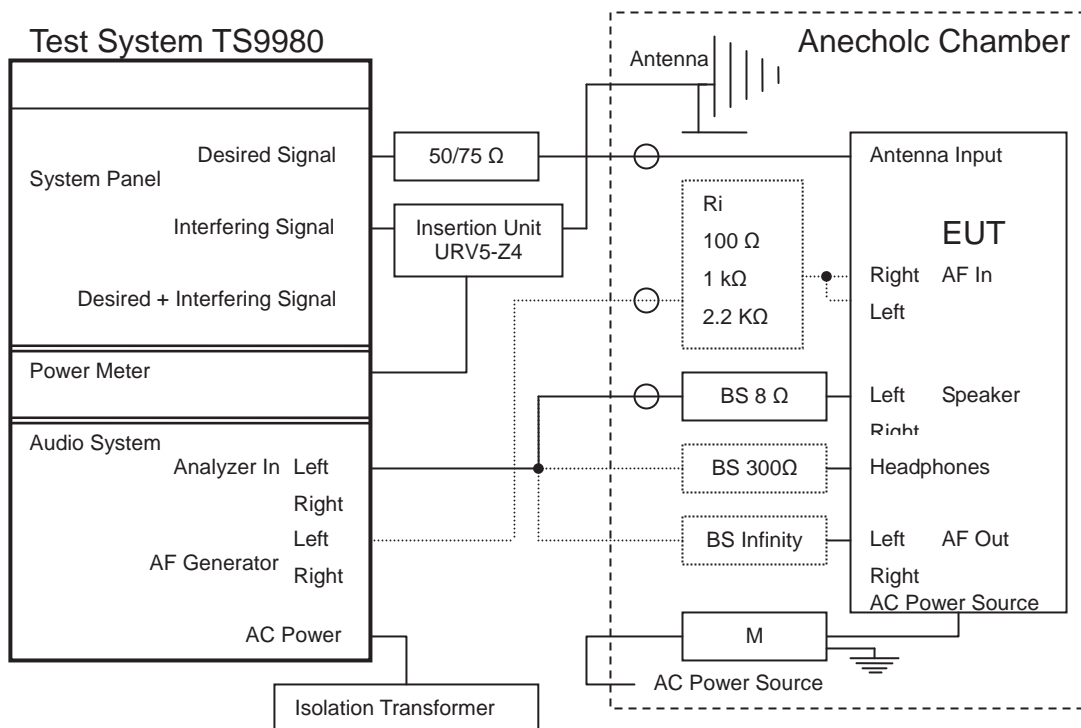
Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the fully-anechoic chamber listed above is the date of Field Uniformity Calibration measurement.

8.4 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters and 3 meters away from the transmitting antenna in the fully anechoic chamber.
- c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters and 3 meters away from the transmitting antenna in the fully anechoic chamber. Also if the floor-standing equipment which is capable of being stood on a non-conducting 0.8m high platform may be so arranged.
- d. All EUT's individual faces shall be fully enclosed by the "uniform area" and its wires shall be arranged parallel to the uniform area of the field.
- e. Before testing the EUT, the intensity of the established field strength is checked by placing the field sensor at a calibration grid point to give the calibrated field strength to measure the EUT.
- f. After the calibration has been verified, the test field can be generated using the values obtained from the calibration.
- g. Perform the test with the specified immunity level in the test frequency range and with the specified modulation type.
- h. The transmitting antenna is normally facing the front side of the EUT with vertical polarization to perform the test.
- i. The dwell time shall be not less than the time necessary for the EUT to be exercised and be able to respond.
- j. Record the performance of the EUT.

8.5 Test Setup



8.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

8.7 Test Results

Test: Keyed Carrier S5

Test Mode: Amplifier -

Monitor: Speaker Out8 R

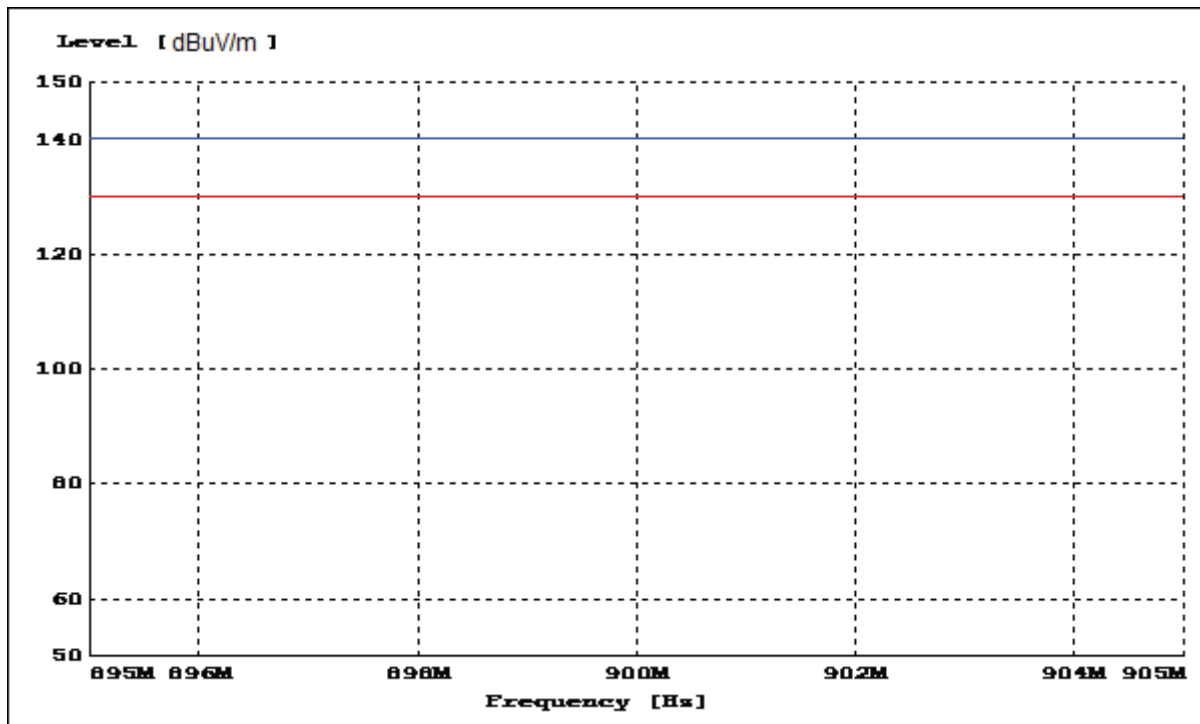
Operating Mode: Audio In

S/N: 54.1 dB

Frequency: -

AF Level: 56.6 mW

Interf. Signal: Scan



Test Mode: Amplifier -

Monitor: Speaker Out8 L

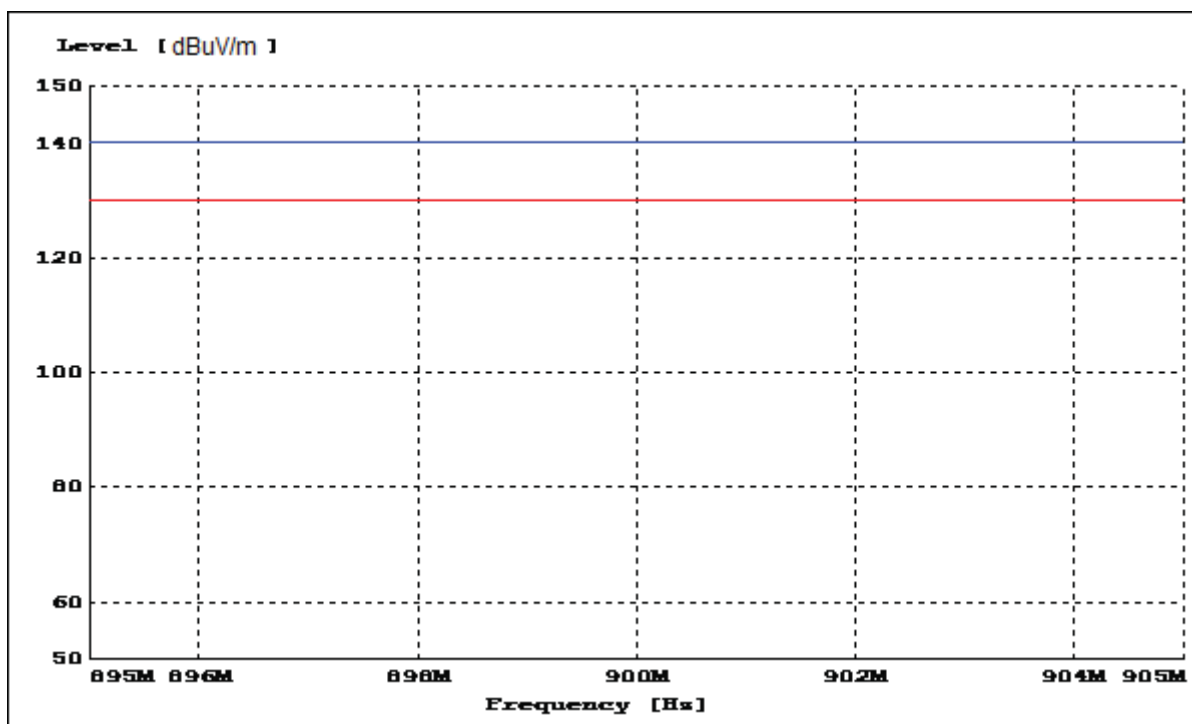
Operating Mode: Audio In

S/N: 53.7 dB

Frequency: -

AF Level: 59.8 mW

Interf. Signal: Scan



9. Electrostatic Discharge (ESD) Immunity Test

9.1 Specifications of Immunity Test Requirement

Product (Generic) Standard	: EN 55020:2007
Basic Standard	: IEC 61000-4-2:2008
Required Performance	: B
Test Level	: 2 (Contact discharge) : 3 (Air discharge)
Discharge Voltage	: Contact → ±4kV (Direct / Indirect discharge) : Air → ±2 kV, ±4kV, ±8kV (Direct discharge)
Time Interval	: 1 sec. minimum
Number of discharges	: Minimum 20 times at each test point
Test Voltage	: 230V/50Hz
Tester	: Mathew
Ambient Temperature	: 24°C
Relative Humidity	: 44%
Atmospheric Pressure	: 1017mbar

9.2 Description of Performance Criteria

Performance criterion A

The equipment shall continue to operate as intended during the test. No change of actual operating state (for example change of channel) is allowed as a result of the application of the test. Multifunction equipment shall for each function meet the relevant requirements. Evaluation is carried out for audio and video functions. The equipment is supposed to operate as intended if the criteria of "Evaluation of audio quality" and/or "Evaluation of picture quality" are fulfilled.

Performance criterion B

The equipment shall continue to operate as intended after the test. No loss of function is allowed after the test when the apparatus is used as intended, but failures which are recovered automatically but which cause temporary delay in processing, are permissible. No change of actual operating state for example change of channel or stored data and settings is allowed as a result of the application of the test. During the test, degradation of performance is allowed.

9.3 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Electrostatic Generator	EM TEST	DITO/ V0537100716	Sept. 9, 2011	Sept. 9, 2012
TR8 shielded room	ETS. LINDGREN	TR8/ 15353-C	NCR	NCR

Note:

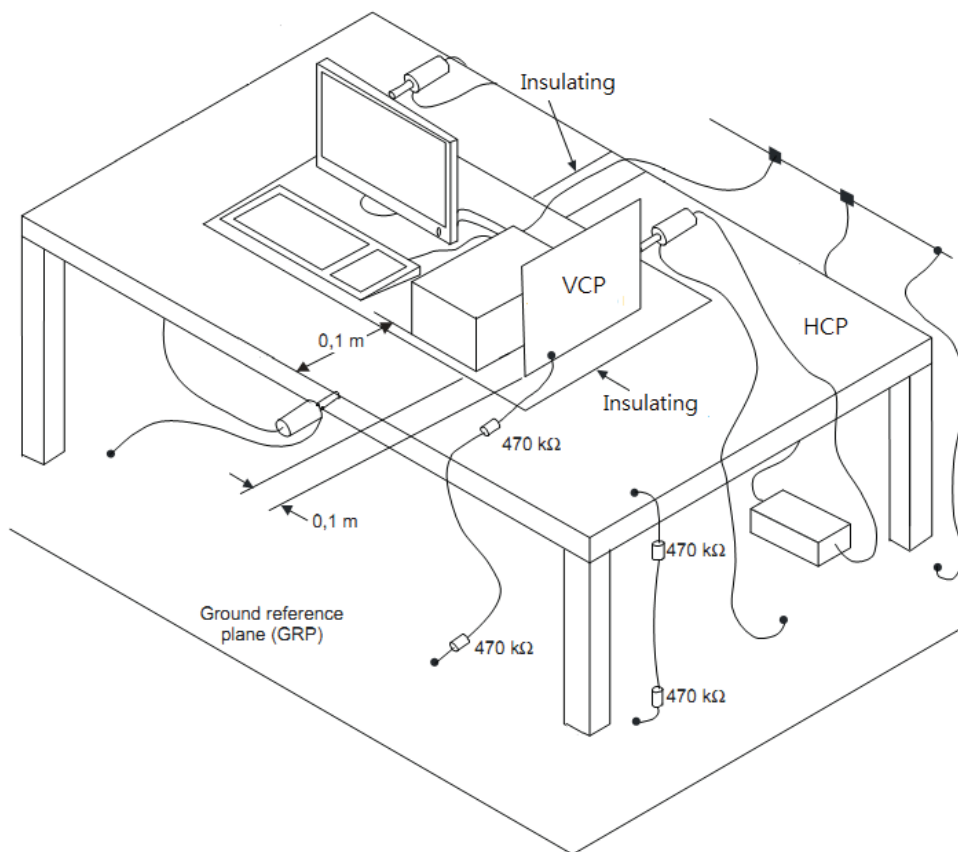
1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

9.4 Test Procedures

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the ground reference plane in the shielded room. Also a HCP (Horizontal Coupling Plane) which was connected to the ground reference plane via a cable with a 470k Ω resistor located at each end was placed on the wooden table and isolated with the EUT by an insulating support 0.5mm thick. The ground reference plane shall project beyond the EUT or HCP by at least 0.5m on all sides.
- c. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 0.1 meters above the ground reference plane in the shielded room. The ground reference plane shall project beyond the EUT by at least 0.5m on all sides.
- d. Keep the EUT 1m away from all other metallic walls in the shielded room as the minimum distance.
- e. The static electricity discharges shall be applied only to those points and surfaces of the EUT which are accessible to persons during normal use. Contact discharge is the preferred test method and it is applied to the conductive surfaces of EUT and coupling planes. Air discharge shall be used where contact discharge cannot be performed and it is applied to the insulating surfaces of EUT.
- f. The discharge return cable of the generator shall be kept at a distance of at least 0.2m from the EUT whilst the discharge is being applied.
- g. The time interval between successive single discharges was at least 1 second.
- h. Select appropriate points of the EUT for contact discharge and put marks on it to indicate the tested point(s). Then start the contact discharge with the tip of the discharge electrode to touch the EUT before the discharge switch is operated.
- i. Use the round discharge tip of the discharge electrode to scan the EUT to select the points for air discharge. Then start the air discharge by approaching the discharge electrode as fast as possible to touch the EUT. After each discharge, the ESD generator shall be removed from the EUT.
- j. The indirect HCP discharge test is applied at the front edge of each HCP opposite the center point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

- k. The indirect VCP (Vertical Coupling Plane) discharge test is applied to the center of one vertical edge of the coupling plane. The VCP, of dimensions 0.5m×0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. It shall be applied with sufficient different positions such that the four faces of the EUT are completely illuminated.

9.5 Test Configurations



9.6 Photographs of the Test Configurations

Please refer to the Attachment 1 of the present report.

9.7 Test Results

Test Mode : Mode 1

Discharge Voltage (kV)	Type of discharge	Label for Dischargeable Points	Performance		Result (Pass/Fail)
			Required	Observation	
±4	Contact	3~7	B	A	Pass
±2	Air	1,2	B	A	Pass
±4	Air	1,2	B	A	Pass
±8	Air	1,2	B	A	Pass
±4	HCP-Bottom	Edge of the HCP	B	A	Pass
±4	VCP-Front	Center of the VCP	B	A	Pass
±4	VCP-Left	Center of the VCP	B	A	Pass
±4	VCP-Back	Center of the VCP	B	A	Pass
±4	VCP-Right	Center of the VCP	B	A	Pass