EMC TEST REPORT
for
Azlan Logistics Limited

SP-1800P Pair 60w Active Loudspeakers
Model No. : SP-1800P

Applicant	:	Azlan Logistics Limited Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China Tel: (86) 755-26066544 Fax: (86) 755-26014772

Report Number	:	R011605502Y
Date of Test	:	May 01~04, 2016
Date of Report	:	May 04, 2016

TABLE OF CONTENTS

Description Page

TEST REPORT VERIFICATION

Applicant	:	Azlan Logistics Limited
Manufacturer	:	Azlan Logistics Limited
EUT	:	SP-1800P Pair 60w Active Loudspeakers

MODEL NO.: SP-1800P

SERIAL NO.: N.A.

TRADE MARK: VISION

RATING: 16V⎓ 5.4A

Measurement Procedure Used:

AS/NZS CISPR 13: 2012

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the AS/NZS CISPR 13 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited

Test Date: May 01~04, 2016

Prepared by : (Engineer/ Kebo Zhang)

Reviewer : (Project Manager/ Oliay Yang)

Approved & Authorized Signer : (Manager/Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	SP-1800P Pair 60w Active Loudspeakers
Model Number	:	SP-1800P
Test Power Supply	:	AC 240V, 50Hz
Applicant	:	Azlan Logistics Limited Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Manufacturer	:	Azlan Logistics Limited
Address	:	Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Factory	:	Azlan Logistics Limited
Address	:	Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke, Hampshire, RG24 8WQ, United Kingdom
Date of receipt	:	May 01, 2016
Date of Test	:	May 01~04, 2016

1.2.Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS - LAB Code: L3503
Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 10, 2013

IC-Registration No.: 8058A-1
Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A-1, Feb. 22, 2013

Test Location
All Emissions tests were performed:
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.3. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.1dB (Horizontal)
Ur = 4.3dB (Vertical)

Conduction Uncertainty : Uc =3.4dB

1.4. Test Summary

For the EUT described above. The standards used were AS/NZS CISPR 13:2012.
Tests Carried Out Under AS/NZS CISPR 13:2012

Standard	Test Items	Status
AS/NZS CISPR 13:2012	Power Line Conducted Emission Test (150kHz To 30MHz)	√
AS/NZS CISPR 13:2012	Power disturbance(30MHz To 300MHz)	√
AS/NZS CISPR 13:2012	Radiated Emission Test(FM) (30MHz To 300MHz)	√

√ Indicates that the test is applicable
x Indicates that the test is not applicable

2. MEASURING DEVICES AND TEST EQUIPMENT

Test equipments list of Shenzhen Anbotek Compliance Laboratory Limited.

2.1. Conducted Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 17, 2016	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 17, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 17, 2016	1 Year

2.2. Radiated Emission Test

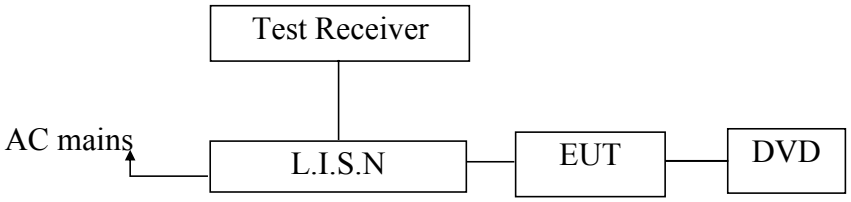
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2016	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2016	1 Year
3.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2016	1 Year

2.3.Disturbance Power Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Absorbing Clamp	FCC	F-201-23M M	08166	Apr. 17, 2015	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 17, 2015	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 17, 2015	1 Year

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Block Diagram of Test Setup



3.2. Measuring Standard

AS/NZS CISPR 13: 2012

3.3. Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

3.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet AS/NZS CISPR 13 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown on Section 3.1.

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT work in measuring mode (Aux Mode, AV Mode) and measure it.

3.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the AS/NZS CISPR 13 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 9KHz in 150KHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated for AC mains.

The test results are listed in Section 3.7.

3.7. Measuring Results

PASS.

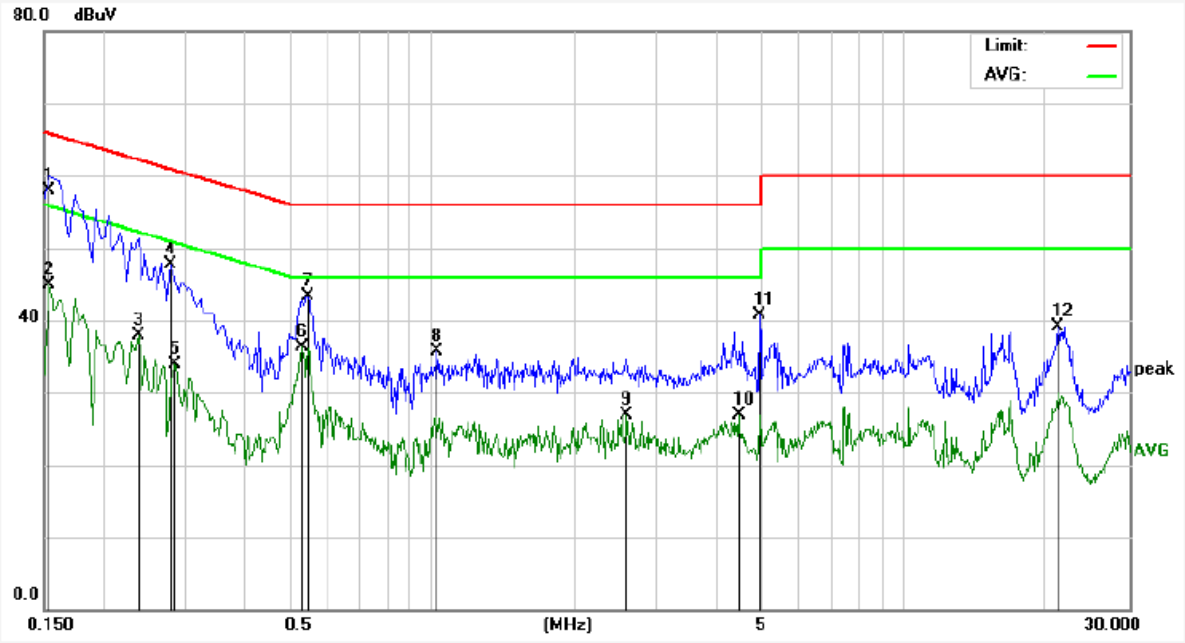
The frequency range 150kHz to 30MHz is investigated

The test curves are shown in the following pages.

The EUT was tested on (Aux Mode, AV Mode) modes,only the worst data of (AV Mode) are attached in the following pages.

CONDUCTED EMISSION TEST DATA

Test Site:	1# Shielded Room
Operating Condition:	AV Mode
Test Specification:	AC 230V, 50Hz
Comment:	L
	Temp.:22.2℃ Hum.:60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1539	37.90	20.00	57.90	65.78	-7.88	QP	
2	0.1539	24.97	20.00	44.97	55.78	-10.81	AVG	
3	0.2380	17.83	20.00	37.83	52.16	-14.33	AVG	
4	0.2779	27.71	20.00	47.71	60.88	-13.17	QP	
5	0.2860	13.91	20.00	33.91	50.64	-16.73	AVG	
6	0.5299	16.35	20.00	36.35	46.00	-9.65	AVG	
7	0.5460	23.37	20.00	43.37	56.00	-12.63	QP	
8	1.0220	15.70	20.00	35.70	56.00	-20.30	QP	
9	2.5940	6.90	20.00	26.90	46.00	-19.10	AVG	
10	4.4620	6.96	20.00	26.96	46.00	-19.04	AVG	
11	4.9420	20.65	20.00	40.65	56.00	-15.35	QP	
12	21.2340	19.19	20.00	39.19	60.00	-20.81	QP	

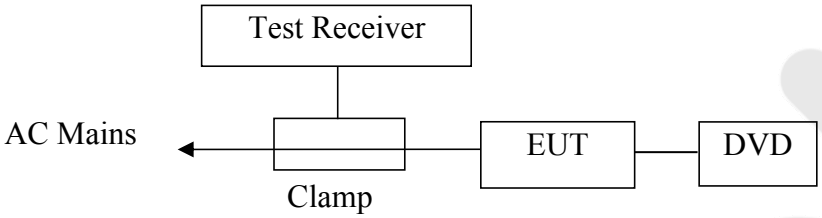
CONDUCTED EMISSION TEST DATA

Test Site:	1# Shielded Room
Operating Condition:	AV Mode
Test Specification:	AC 230V, 50Hz
Comment:	N
	Temp.:22.2℃ Hum.:60%

No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1499	27.13	20.00	47.13	56.00	-8.87	AVG	
2	0.1620	25.76	20.00	45.76	55.36	-9.60	AVG	
3	0.1700	35.68	20.00	55.68	64.96	-9.28	QP	
4	0.2179	20.28	20.00	40.28	52.89	-12.61	AVG	
5	0.2700	30.90	20.00	50.90	61.12	-10.22	QP	
6	0.3780	21.68	20.00	41.68	58.32	-16.64	QP	
7	0.5380	26.31	20.00	46.31	56.00	-9.69	QP	
8	0.5380	18.00	20.00	38.00	46.00	-8.00	AVG	
9	2.5819	9.28	20.00	29.28	46.00	-16.72	AVG	
10	4.7899	10.98	20.00	30.98	46.00	-15.02	AVG	
11	4.9740	21.23	20.00	41.23	56.00	-14.77	QP	
12	16.1380	23.19	20.00	43.19	60.00	-16.81	QP	

4. DISTURBANCE POWER TEST

4.1. Block Diagram of Test Setup



4.2. Measuring Standard

AS/NZS CISPR 13: 2012

4.3. Disturbance Power Limits

All emanations from devices or system including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
30 ~ 300	45 Increasing Linearly with Frequency to 55	35 Increasing Linearly with Frequency to 45

4.4. EUT Configuration on Measurement

The AS/NZS CISPR 13 Regulations test method must be used to find the maximum emission during radiated emission measurement. The configuration of the EUT is the same as used in conducted emission measurement.

4.5. Operating Condition of EUT

4.5.1. Setup the EUT and simulators as shown in Section 4.1.

4.5.2. Turn on the power of all equipments.

4.5.3. Let the EUT work in measuring mode (AV Mode) and measure it.

4.6. Test Procedure

The EUT is placed on the ground and away from other metallic surface at least 0.8m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

The bandwidth of the test receiver(R&S ESCI) is set at 120kHz.

All the test results are listed in Section 4.7.

4.7. Disturbance Power Test Results

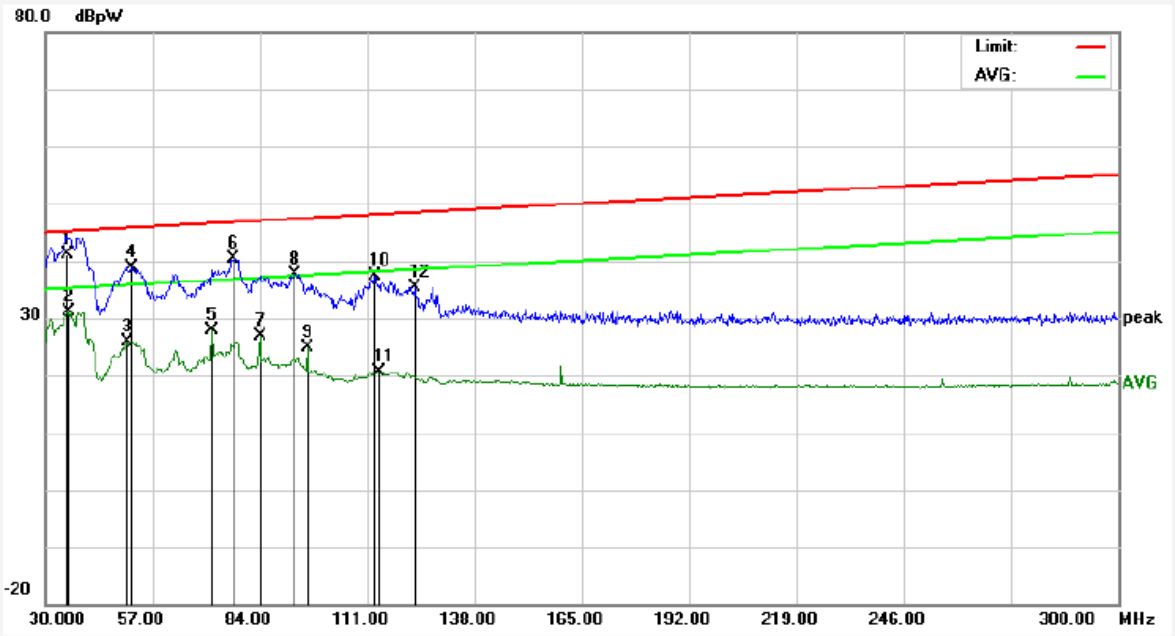
PASS.

The frequency spectrum from 30 MHz to 300 MHz is investigated.

The test curves are shown in the following pages.

Power Clamp Test

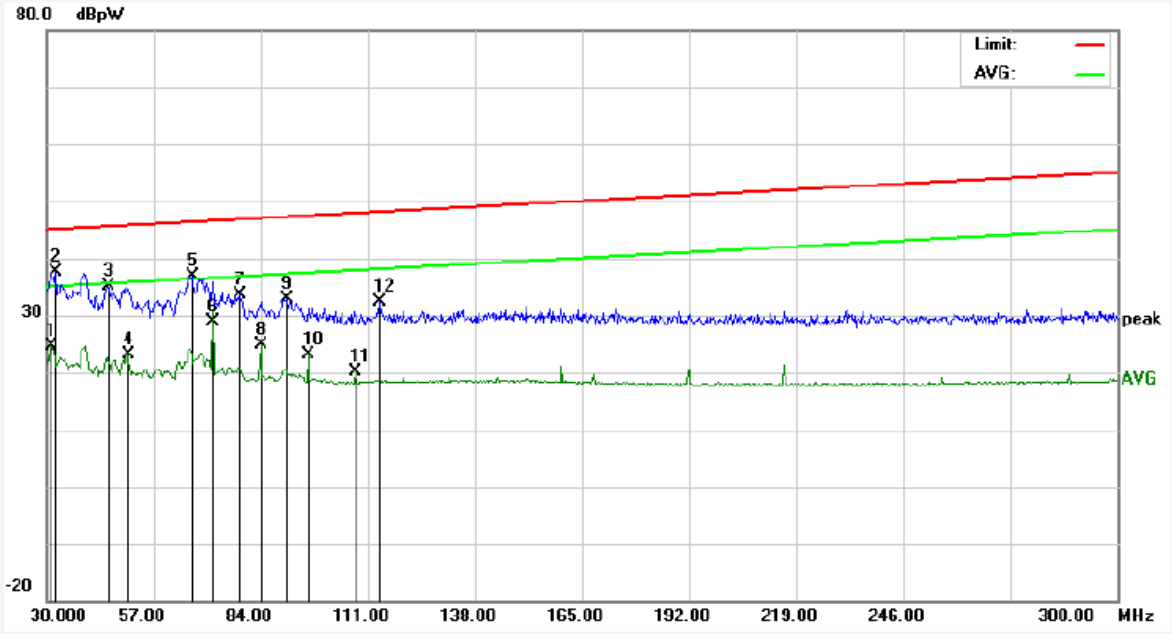
Test Site:	1# Shielded Room
Operating Condition:	AV Mode
Test Specification:	AC 230V, 50Hz
Comment:	AC LINE
	Temp.:22.2℃ Hum:60%



No.	Freq. (MHz)	Reading (dBpW)	Factor (dB)	Result (dBpW)	Limit (dBpW)	Over Limit (dB)	Detector	Remark
1	35.6400	15.19	26.00	41.19	45.21	-4.02	QP	
2	35.8800	5.14	26.00	31.14	35.22	-4.08	AVG	
3	50.6800	-0.06	26.00	25.94	35.77	-9.83	AVG	
4	51.7599	12.87	26.00	38.87	45.81	-6.94	QP	
5	72.0000	1.84	26.00	27.84	36.56	-8.72	AVG	
6	77.5199	14.48	26.00	40.48	46.76	-6.28	QP	
7	84.0000	0.95	26.00	26.95	37.00	-10.05	AVG	
8	93.0400	11.73	26.00	37.73	47.33	-9.60	QP	
9	96.0000	-1.17	26.00	24.83	37.44	-12.61	AVG	
10	112.9600	11.38	26.00	37.38	48.07	-10.69	QP	
11	114.1600	-5.40	26.00	20.60	38.12	-17.52	AVG	
12	122.9600	9.33	26.00	35.33	48.44	-13.11	QP	

Power Clamp Test

Test Site:	1# Shielded Room
Operating Condition:	AV Mode
Test Specification:	AC 230V, 50Hz
Comment:	DC LINE
	Temp.:22.2℃ Hum:60%



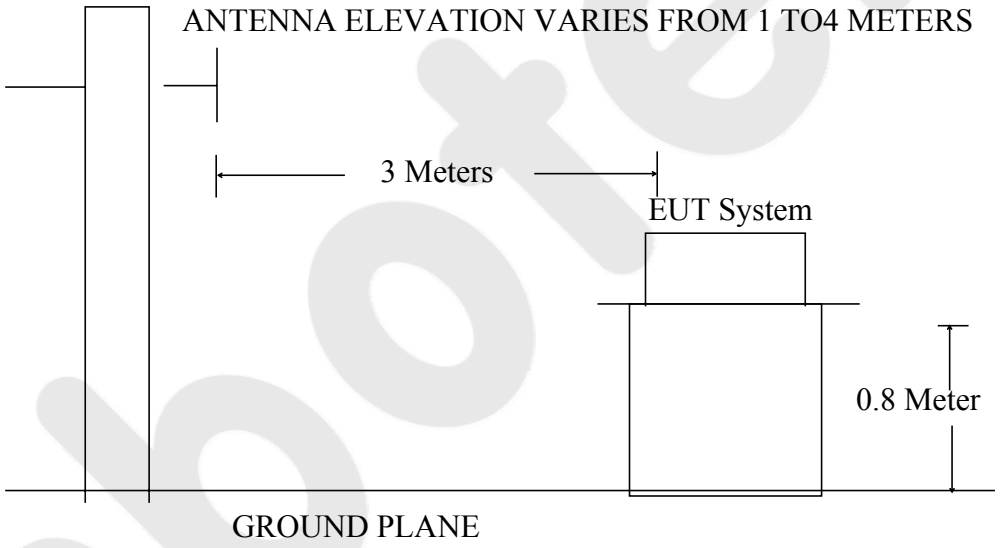
No.	Freq. (MHz)	Reading (dBpW)	Factor (dB)	Result (dBpW)	Limit (dBpW)	Over Limit (dB)	Detector	Remark
1	31.4799	-1.26	26.00	24.74	35.05	-10.31	AVG	
2	32.4400	11.59	26.00	37.59	45.09	-7.50	QP	
3	45.5200	9.07	26.00	35.07	45.57	-10.50	QP	
4	50.5598	-2.99	26.00	23.01	35.76	-12.75	AVG	
5	66.8399	10.92	26.00	36.92	46.36	-9.44	QP	
6	72.0000	2.77	26.00	28.77	36.56	-7.79	AVG	
7	78.7600	7.66	26.00	33.66	46.81	-13.15	QP	
8	84.0000	-1.02	26.00	24.98	37.00	-12.02	AVG	
9	91.0000	6.92	26.00	32.92	47.26	-14.34	QP	
10	96.0000	-2.85	26.00	23.15	37.44	-14.29	AVG	
11	108.0000	-5.82	26.00	20.18	37.89	-17.71	AVG	
12	114.2000	6.38	26.00	32.38	48.12	-15.74	QP	

5. RADIATED EMISSION TEST

5.1. Block Diagram of Test

5.1.1. Block diagram of connection between the EUT and simulators

5.1.2. Block diagram of test setup (In chamber)



5.2. Measuring Standard

AS/NZS CISPR 13: 2012

5.3. Radiated Emission Limits

5.3.1. AS/NZS CISPR 13: 2012

Radiated Emission Limits

All emanations from an AS/NZS CISPR 13 device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY MHz	DISTANCE Meters	Limit Values dB(μV)/m	
≤1000	3	Fundamental	57
30~300	3	Harmonics	52
300~1000	3	Harmonics	56
30~230	3	Other	40
230~1000	3	Other	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Test

The AS/NZS CISPR 13 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.5. Operating Condition of EUT

5.5.1. Turn on the power.

5.5.2. Let the EUT work in measuring mode (Aux Mode, AV Mode) and measure it.

5.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCI) is set at 120kHz.

The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 5.7.

5.7. Measuring Results

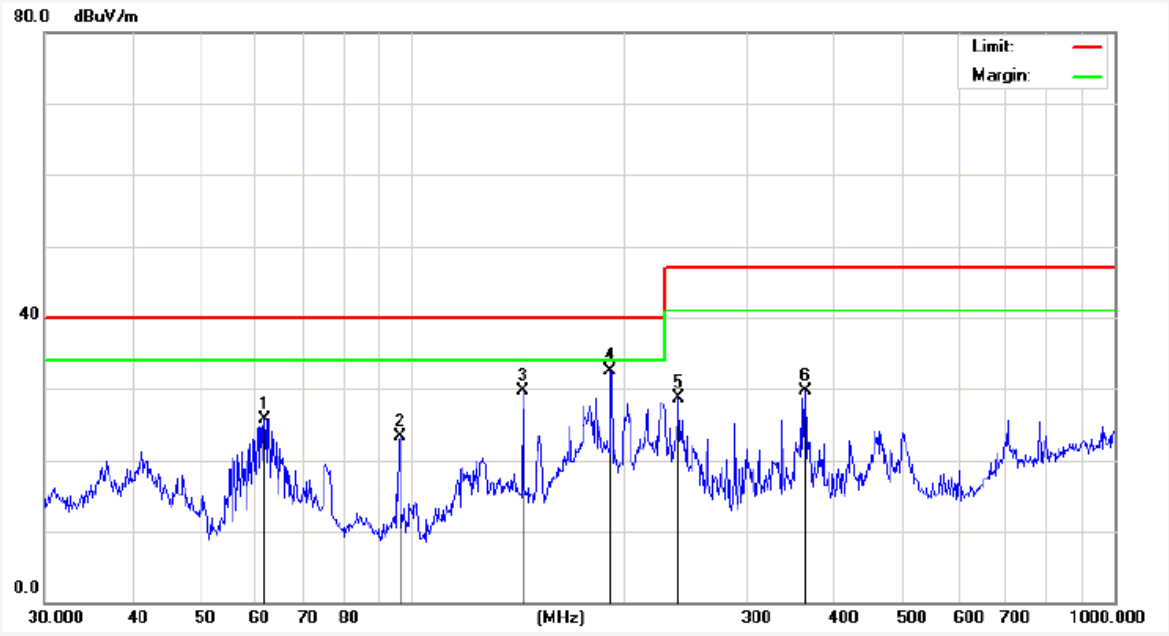
PASS.

The frequency range from 30MHz to 1000MHz is investigated.

The test curves are shown in the following pages.

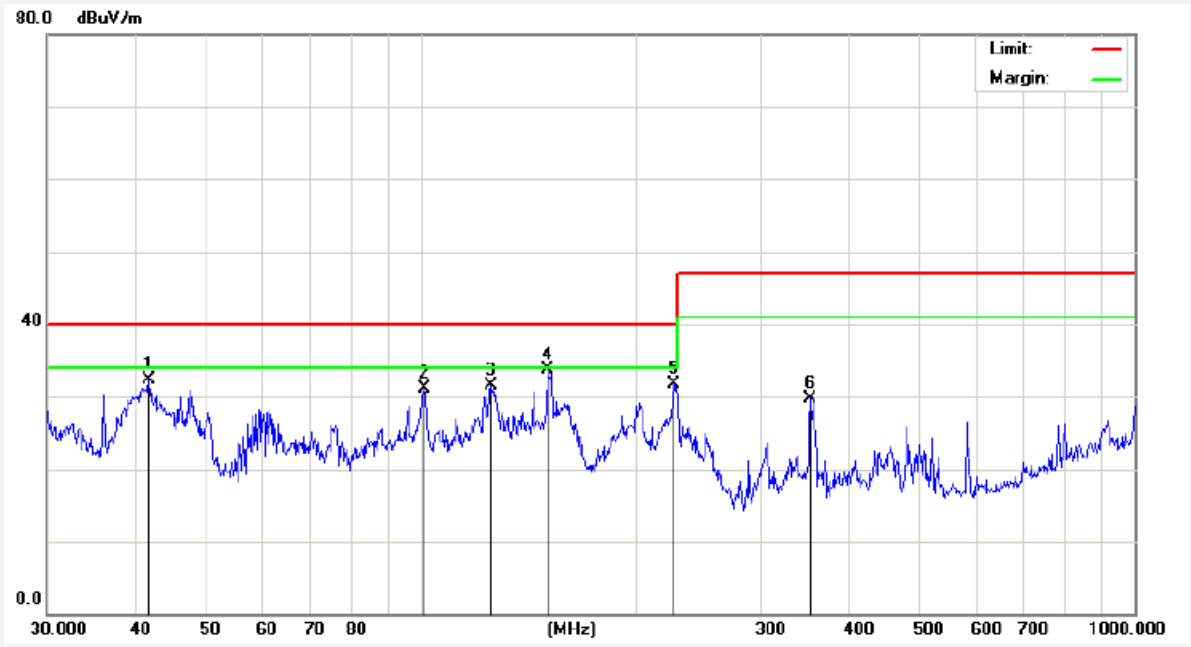
The EUT was tested on (Aux Mode, AV Mode) modes,only the worst data of (AV Mode) are attached in the following pages.

Job No.:	**AT011605500E**	**Polarization:**	**Horizontal**
Standard:	**(RE)AS/NZS CISPR 13_3m**	**Power Source:**	**AC 230V, 50Hz**
Test item:	**Radiation Test**	**Temp.(℃)/Hum.(%RH):**	**24.3(℃)/55%RH**
Note:	**AV Mode**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	61.7781	54.49	-28.74	25.75	40.00	-14.25	peak			
2	96.0986	55.38	-32.04	23.34	40.00	-16.66	peak			
3	143.8295	63.86	-34.10	29.76	40.00	-10.24	peak			
4	191.7450	63.93	-31.33	32.60	40.00	-7.40	peak			
5	239.9874	56.86	-28.25	28.61	47.00	-18.39	peak			
6	362.9844	53.38	-23.70	29.68	47.00	-17.32	peak			

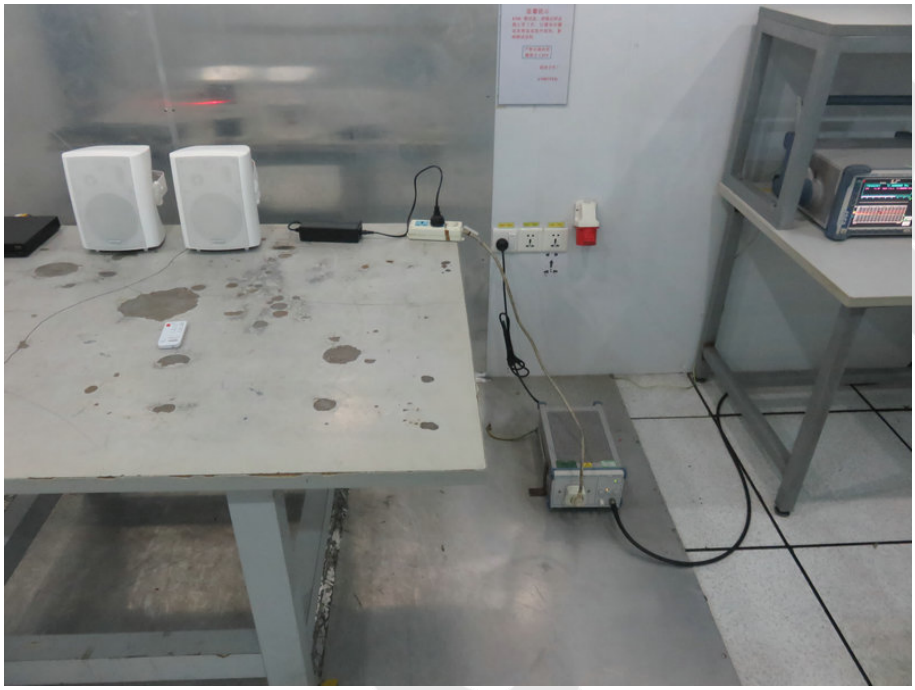
Job No.:	**AT011605500E**	**Polarization:**	**Vertical**
Standard:	**(RE)AS/NZS CISPR 13_3m**	**Power Source:**	**AC 230V, 50Hz**
Test item:	**Radiation Test**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Note:	**AV Mode**	**Distance:**	**3m**



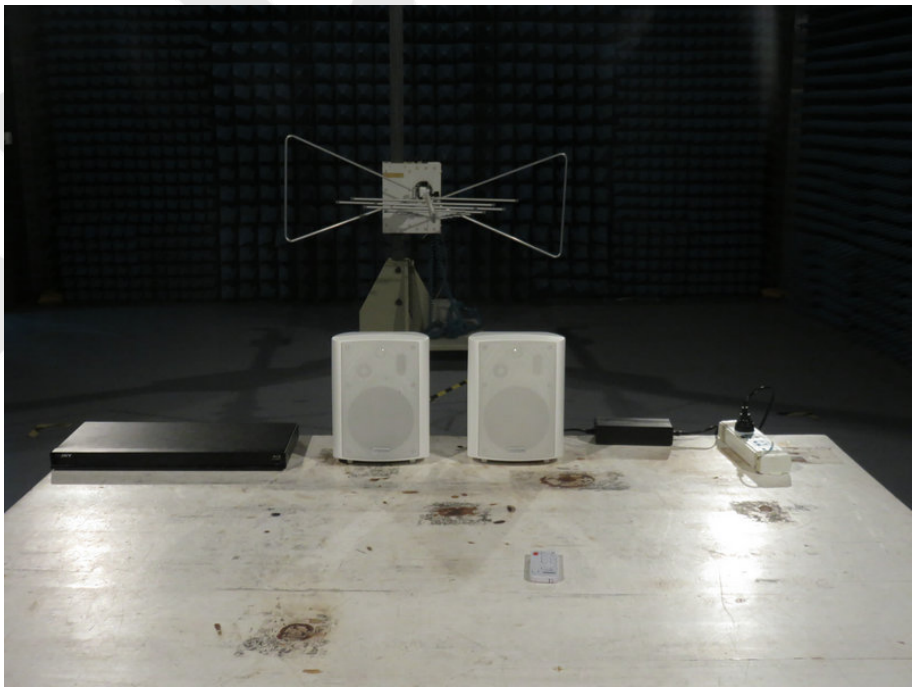
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.7129	54.04	-21.68	32.36	40.00	-7.64	peak			
2	101.2885	57.80	-26.64	31.16	40.00	-8.84	peak			
3	125.4457	59.41	-27.90	31.51	40.00	-8.49	peak			
4	150.5378	62.59	-28.96	33.63	40.00	-6.37	peak			
5	226.0994	56.67	-25.03	31.64	40.00	-8.36	peak			
6	351.7079	52.66	-22.97	29.69	47.00	-17.31	peak			

6. PHOTOGRAPH

6.1. Photo of Power Line Conducted Emission Test



6.2. Photo of Radiated Emission Test



6.3. Photo of Disturbance Power Test

APPENDIX I
(Photos of EUT)

Figure 1
The EUT- Overall View

Figure 2
The EUT- Front View

Figure 3
The EUT- Back View

Figure 4
The EUT- Side View

Figure 5
The EUT- Partial View

Figure 6
The EUT- Partial View

Figure 7
The EUT- Inside View

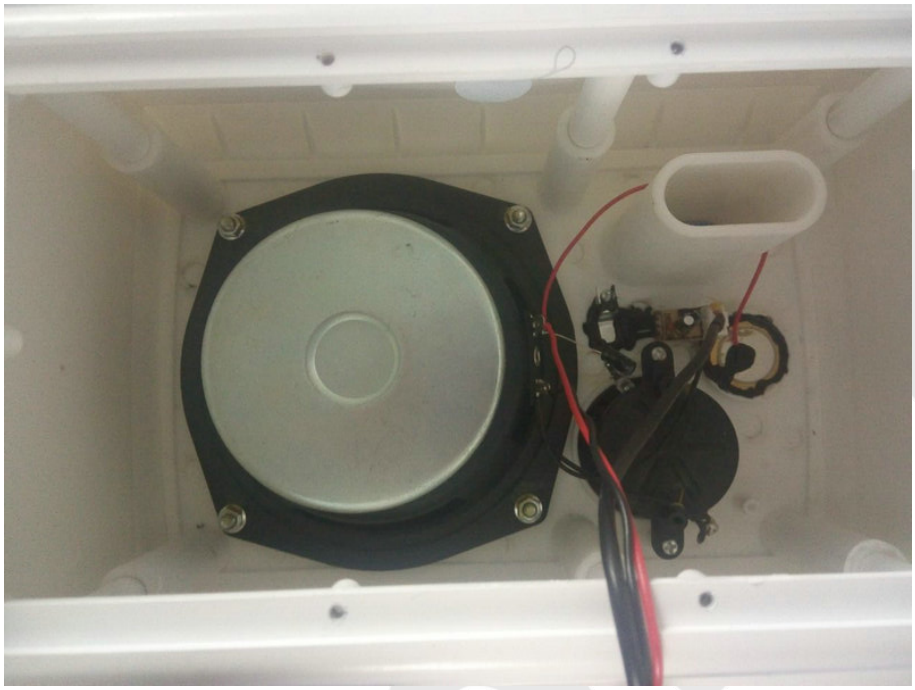


Figure 8
The EUT- Inside View

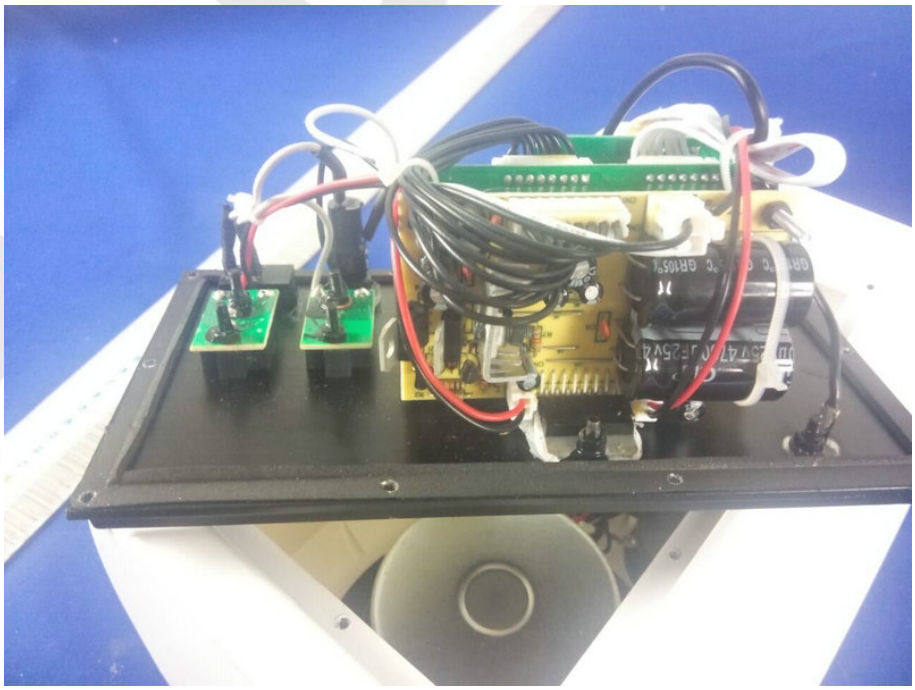


Figure 9
The EUT- Inside View

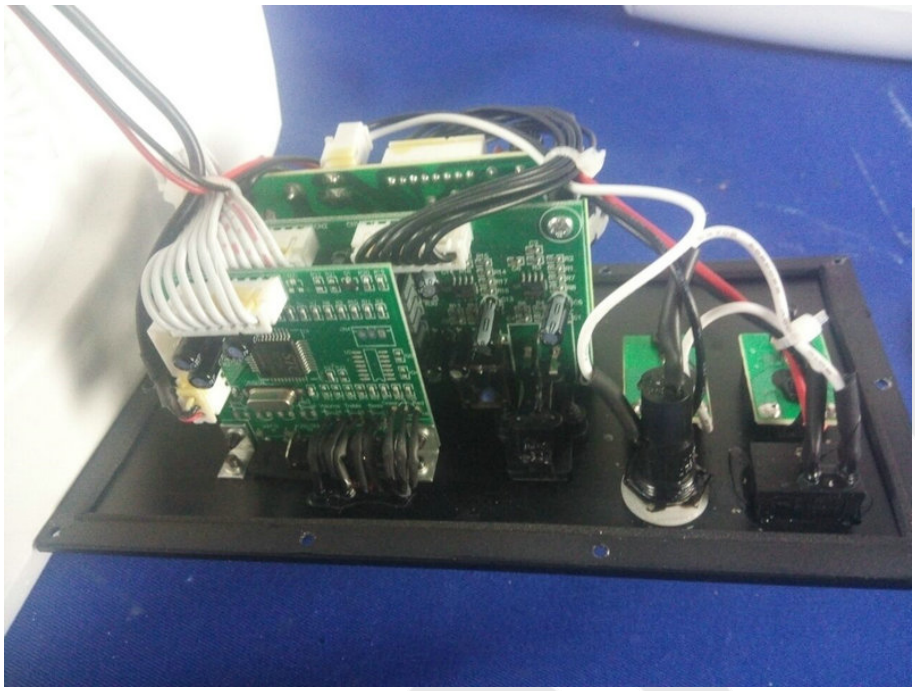


Figure 10
The EUT- Remote Control View

Figure 11
The EUT- Adapter View