



C-Tick COMPLIANCE TEST REPORT

Technical Statement of Conformity
in accordance with AS 62040.2:2008

The Product

Equipment Under Test	: Uninterruptible Power System
Model Number	: BK500EI
Product Series	: BK475I, BK475XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank) BK500-RS, BK500XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank)
Report Number	: HA120367-CT
Issue Date	: 09-JUL-2012
Test Result	: Compliance

is produced by

American Power Conversion Holding Inc. Taiwan Branch
3F.,No.205,Sec.3,Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.



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Verification

Applicant : American Power Conversion Holding Inc. Taiwan Branch
Manufacturer : American Power Conversion Holding Inc. Taiwan Branch
Equipment Under Test : Uninterruptible Power System
Model Number : BK500EI
Product Series : BK475I,
BK475XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank)
BK500-RS,
BK500XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank)
Sample Received Date : 18-JUN-2012
Test Standard :

Emission:☒ AS 62040.2:2008

Class B

Remark:

This report details the results of the test carried out on one sample. This report shows the EUT is technically compliant with the AS 62040.2:2008 official requirements. This report applies to the above sample only and shall not be reproduced in part without written approval of *HongAn Technology Co., Ltd.*

Documented by:

Zoe CHEN / ADM. Dept. Staff

Date: 2012-07-09**Tested by:**

H.B.LIANG/ ENG. Dept. Staff

Date: 2012-07-04**Approved by:**

Peter Chin / SEC. Manager

Date: 2012-07-09



Summary of Test Result – Emission

Test Standard	Test Item	Test Result	Remark
AS 62040.2:2008 Class B	Conducted Emission	Pass	Highest Emission-(LINE mode) L: 0.27MHz, Q.P.38.59dBuV, Margin -22.56dB N: 0.27MHz, Q.P37.19dBuV, Margin -23.96 dB
AS 62040.2:2008 Class B	Radiated Emission (Below 1GHz)	Pass	Highest Emission-(Battery mode) H: 42.41MHz, 18.50dBuV, Margin -11.50dB Antenna Height 400 cm, Turntable Angle 70° V: 117.62MHz, 18.96dBuV, Margin-11.04 dB Antenna Height 102 cm, Turntable Angle 260°

Measurement Uncertainty – Emission

The following measurement uncertainty has been calculated for Emission Tests performed on the EUT as specified in CISPR 16-4-2:

Test Item		Uncertainty
Conducted Emission		$\pm 3.61\text{dB}$
Radiated Emission	Below 1GHz	$\pm 5.04\text{dB}$
	Above 1GHz	$\pm 4.97\text{dB}$

This reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately 95%.

1 General Description

1.1 Description of Equipment Under Test (EUT)

Equipment Under Test	: Uninterruptible Power System
Model Number	: BK500EI
Series	: BK475I, BK475XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank) BK500-RS, BK500XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank)
Applicant Address of Applicant	American Power Conversion Holding Inc. Taiwan Branch : 3F.,No.205,Sec.3,Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.
Manufacturer Address of Manufacturer	American Power Conversion Holding Inc. Taiwan Branch : 3F.,No.205,Sec.3,Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.
Power Supply	: AC:230V/50Hz
Data Cable	: Data Cable <input checked="" type="checkbox"/> Shielded <input type="checkbox"/> Non-Shielded <input checked="" type="checkbox"/> Detachable, 2m <input type="checkbox"/> Un-Detachable <input checked="" type="checkbox"/> w Ferrite Core <input type="checkbox"/> w/o Ferrite Core RJ 45 Cable <input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Non-Shielded <input checked="" type="checkbox"/> Detachable, 1m <input type="checkbox"/> Un-Detachable <input type="checkbox"/> w Ferrite Core <input checked="" type="checkbox"/> w/o Ferrite Core
Description of EUT	: Dimensions : 28 cm (L) X 9 cm (W) X 16.5 cm (H) Position : <input checked="" type="checkbox"/> Table-top / <input type="checkbox"/> Floor-standing Category of Equipment : <input checked="" type="checkbox"/> C1 <input type="checkbox"/> C2 <input type="checkbox"/> C3 <input type="checkbox"/> C4 Intended Function : The EUT is a Uninterruptible Power System Product Variance : The manufacturer declares that the only difference between the EUT and its product series is the different markets. BK475I, BK475XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank) BK500-RS, BK500XXXXXXXXXX(" X "can be 0-9, A-Z , " - "or blank)

1.2 Test Facility

All the Conducted and Radiated Emission are performed at No. 15-1, Cweishuh Keng, Cweipin Village, Linkou, New Taipei City, Taiwan, R.O.C.

1.3 Test Instruments

Instruments Used for Emission Measurement

Instrument Name	Manufacture Mode	Model Number	Serial Number	Last Cal. Date	Next Cal. Date	Test Item
LISN	EMCO	3810/2NM	9702-1820	30-SEP-2011	29-SEP-2012	Conducted Emission
LISN	Rolf Heine Hochfrequenz technik	NNB-4/32T	00001	27-MAR-2012	27-MAR-2013	
RF Current Probe	FCC	F-33-4	53	02-MAY-2011	01-MAY-2012	
Impedance Stabilization Network (ISN)	SCHAFFNER	ISN T400	16832	08-OCT-2011	07-OCT-2012	
EMI Test Signal Analyzer	PMM	PMM 9000	4410J10302	05-AUG-2011	04-AUG-2012	Conducted Emission, Radiation Emission
Spectrum Analyzer	ADVANTEST	R3172	101202158	15-AUG-2011	14-AUG-2012	Radiated Emission
Preamplifier	CHASE	CPA 9231A	3310	08-JUL-2011	07-JUL-2012	
Preamplifier	HD	HD17187	004	23-AUG-2011	22-AUG-2012	
Bilog Antenna	CHASE	CBL 6112B	2860	17-AUG-2011	16-AUG-2012	
Double-Ridged Waveguide Horn	EMCO	3115	9912-5992	02-MAY-2012	01-MAY-2013	

※ The test equipments used are calibrated and can be traced to National ITRI and International Standards.

1.4 Test Methodology

All Emission Tests were performed according to the procedures specified in AS 62040.2:2008.

1.5 Auxiliary Equipments

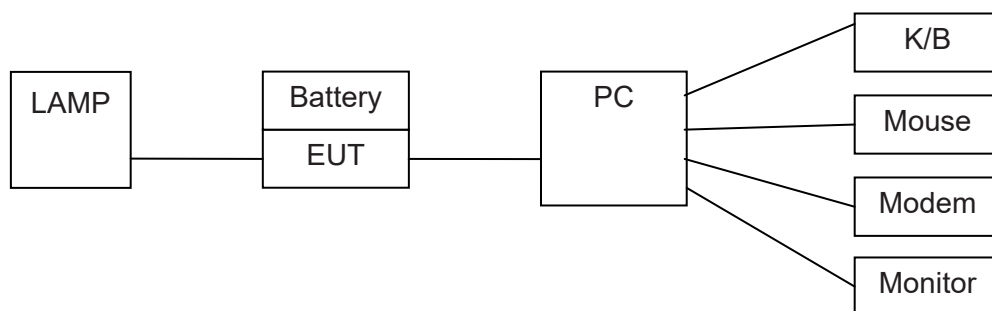
1.5.1. Provided by HongAn Technology Co., Ltd.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Description	
						Data Cable	Power Cable
A1	PC	DCTA	5MCGJ1S	CE Mark, FCC DoC	DELL		Unshielded, 1.8m
B1	Keyboard	Y-UR83	868017-0121	CE Mark, FCC DoC,	Logitech	Shielded (Foil),1.7m	
C1	Mouse	M-BT83	810-000361	CE Mark	Logitech	Shielded (Foil),1.8m	
E1	Modem	E210	N/A	CE Mark, FCC DoC,	MAIAC	Shielded (Braid),1m	Unshielded, 1.8m

1.5.2. Provided by the Manufacturer

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Description	
						Data Cable	Power Cable
N/A	N/A	N/A	N/A	N/A	N/A	N/A	

1.6 Block Diagram





1.7 Identifying the Final Test Mode (Worst Case)

1. LINE mode
2. Battery mode.

Note:

1. After pre-test, we identified that the LINE Mode (the worst case) was most likely to cause maximum disturbance at Conducted Emission. Therefore, the Final EMC Assessment was performed for the worst case.
2. After pre-test, we identified that the Battery Mode (the worst case) was most likely to cause maximum disturbance at Radiated Emission. Therefore, the Final EMC Assessment was performed for the worst case.

1.8 Final Test Mode

1. For Conducted Emission: choosing LINE Mode.
2. For Radiated Emission: choosing Battery Mode.
For Immunity test: choosing LINE Mode.

1.9 Condition of Power Supply

AC 230 V; 50 Hz

1.10 EUT Configuration

1. Setup the EUT as shown in Sec.1.6 Block Diagram.
2. Turn on the power of all equipments.
3. Activate the selected Final Test Mode shown in Sec.1.8.

2 Conducted Emission Test

2.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

2.2 Test Configuration and Procedure

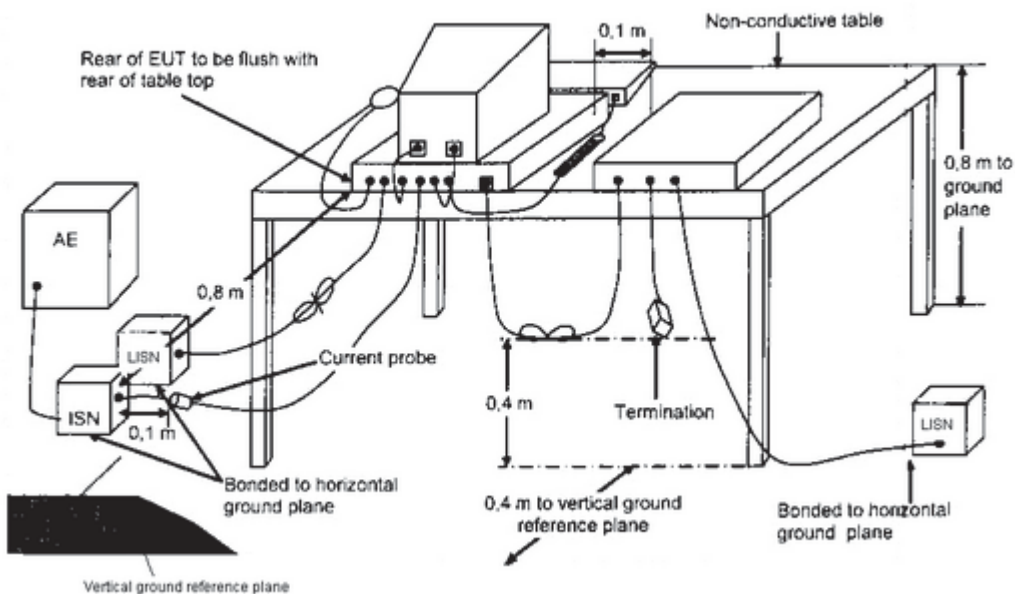


Table-top Equipment

- The EUT was placed on a non-conductive table which was 80 cm above the horizontal coupling plane. The rear of the EUT was 40 cm from the vertical coupling plane.
- The excess interface cables were folded at the cable center into a bundle no longer than 40 cm, so that the bundles were on the table.
- The EUT was connected to the main power through a L.I.S.N. This set up provided 50 ohm / 50 μ H coupling impedance for the measuring equipment.
- All auxiliary equipment received power from a second L.I.S.N.
- The conducted emissions were measured between the Line Phase and the PE ground and between the Neutral Phase and the PE ground using an EMI Receiver.
- The values were recorded.

2.3 Test Limit

AS 62040.2:2008

Frequency Range (MHz)	Limits dB(uV)			
	<input checked="" type="checkbox"/> Category C1 UPS		<input type="checkbox"/> Category C2 UPS	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	66 to 56	56 to 46	79	66
0.50 ~ 5.0	56	46	73	60
5.0 ~ 30	60	50	73	60

☐ Category C3 UPS

UPS rated output current A	Frequency Range (MHz)	Limits dB(uV)	
		Q.P. (Quasi-Peak)	A.V. (Average)
>16 - 100	0.15 ~ 0.50	100	90
	0.50 ~ 5.0	89	76
	5.0 ~ 30	90 to 70	80 to 60
>100	0.15 ~ 0.50	130	120
	0.50 ~ 5.0	125	115
	5.0 ~ 30	115	105

The EMI Receiver bandwidth was set at 9 kHz.

2.4 Test Result

PASS

The final test data are shown on the following page(s)

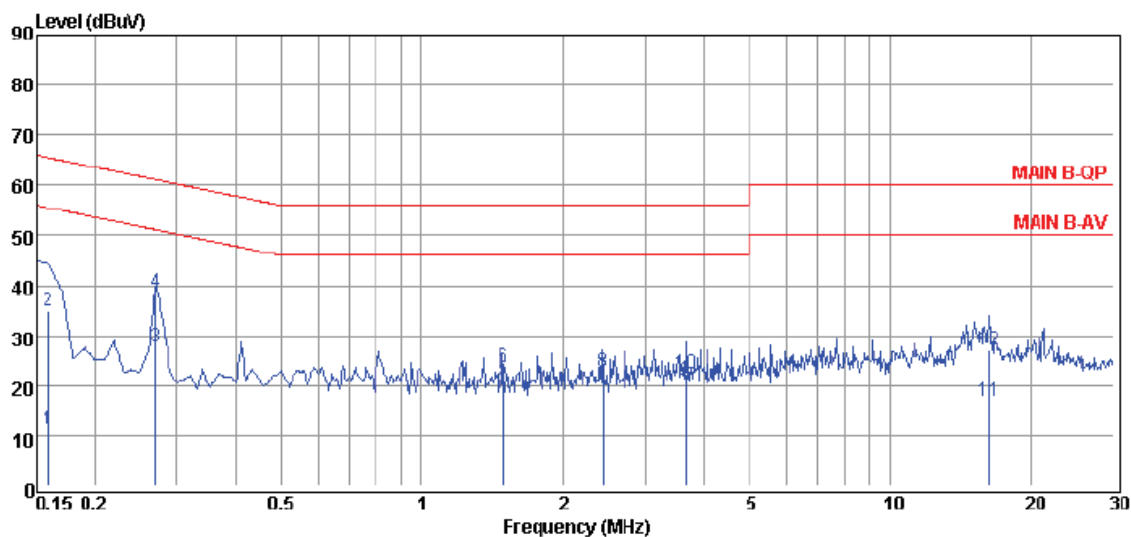
Conducted Emission Test Data-LINE mode

Test Date : 2012-07-03

Power Line : Line

Temperature : 25°C

Humidity : 51%



No.	Freq MHz	Reading dB μ V	C.F dB	Result dB μ V	Limit dB μ V	Margin dB	Power Line	Remark
1	0.16	10.69	0.44	11.13	55.52	-44.39	LINE	Average
2	0.16	34.29	0.44	34.73	65.52	-30.79	LINE	QP
3	0.27	27.37	0.42	27.79	51.15	-23.36	LINE	Average
4	0.27	38.17	0.42	38.59	61.15	-22.56	LINE	QP
5	1.49	20.61	0.55	21.16	46.00	-24.84	LINE	Average
6	1.49	23.01	0.55	23.56	56.00	-32.44	LINE	QP
7	2.44	21.27	0.62	21.89	46.00	-24.11	LINE	Average
8	2.44	22.07	0.62	22.69	56.00	-33.31	LINE	QP
9	3.66	20.13	0.68	20.81	46.00	-25.19	LINE	Average
10	3.66	21.73	0.68	22.41	56.00	-33.59	LINE	QP
11	16.26	15.79	1.13	16.92	50.00	-33.08	LINE	Average
12	16.26	25.89	1.13	27.02	60.00	-32.98	LINE	QP

Remark : All readings are Quasi-Peak and Average values.

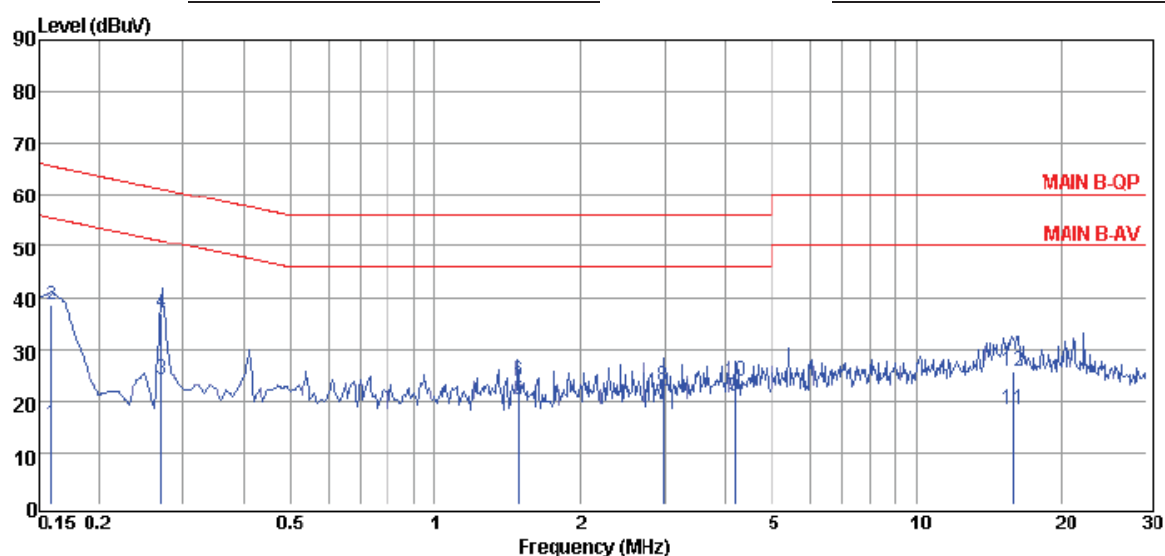
**Conducted Emission Test Data-LINE mode**

Test Date : 2012-07-03

Power Line : Neutral

Temperature : 25°C

Humidity : 51%

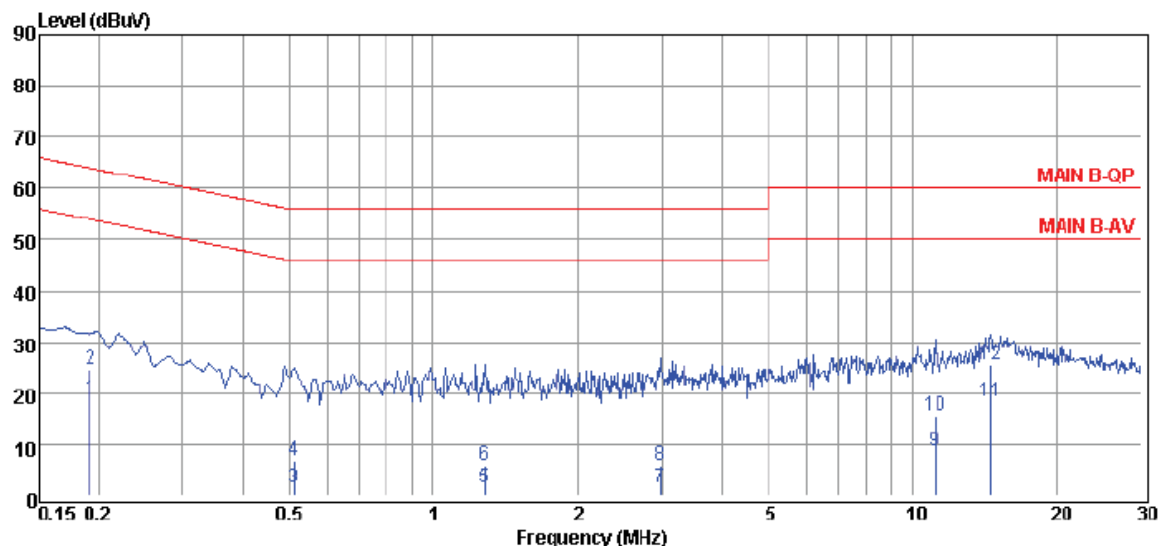


No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV	Limit dBuV	Margin dB	Power Line	Remark
1	0.16	15.20	0.42	15.62	55.46	-39.84	NEUTRAL	Average
2	0.16	38.20	0.42	38.62	65.46	-26.84	NEUTRAL	QP
3	0.27	23.90	0.39	24.29	51.15	-26.86	NEUTRAL	Average
4	0.27	36.80	0.39	37.19	61.15	-23.96	NEUTRAL	QP
5	1.49	19.80	0.52	20.32	46.00	-25.68	NEUTRAL	Average
6	1.49	23.40	0.52	23.92	56.00	-32.08	NEUTRAL	QP
7	2.98	18.80	0.61	19.41	46.00	-26.59	NEUTRAL	Average
8	2.98	22.40	0.61	23.01	56.00	-32.99	NEUTRAL	QP
9	4.20	20.20	0.66	20.86	46.00	-25.14	NEUTRAL	Average
10	4.20	23.40	0.66	24.06	56.00	-31.94	NEUTRAL	QP
11	15.82	17.30	1.05	18.35	50.00	-31.65	NEUTRAL	Average
12	15.82	24.90	1.05	25.95	60.00	-34.05	NEUTRAL	QP

Remark : All readings are Quasi-Peak and Average values.

Conducted Emission Test Data-Battery mode

Test Date : 2012-07-03 Power Line : Line
Temperature : 25°C Humidity : 51%



No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV	Limit dBuV	Margin dB	Power Line	Remark
1	0.19	18.60	0.40	19.00	53.95	-34.95	LINE	Average
2	0.19	24.30	0.40	24.70	63.95	-39.25	LINE	QP
3	0.51	1.17	0.47	1.64	46.00	-44.36	LINE	Average
4	0.51	6.37	0.47	6.84	56.00	-49.16	LINE	QP
5	1.28	1.14	0.53	1.67	46.00	-44.33	LINE	Average
6	1.28	5.24	0.53	5.77	56.00	-50.23	LINE	QP
7	2.98	1.00	0.65	1.65	46.00	-44.35	LINE	Average
8	2.98	5.30	0.65	5.95	56.00	-50.05	LINE	QP
9	11.13	7.82	0.99	8.81	50.00	-41.19	LINE	Average
10	11.13	14.72	0.99	15.71	60.00	-44.29	LINE	QP
11	14.56	17.29	1.11	18.40	50.00	-31.60	LINE	Average
12	14.56	24.49	1.11	25.60	60.00	-34.40	LINE	QP

Remark : All readings are Quasi-Peak and Average values.

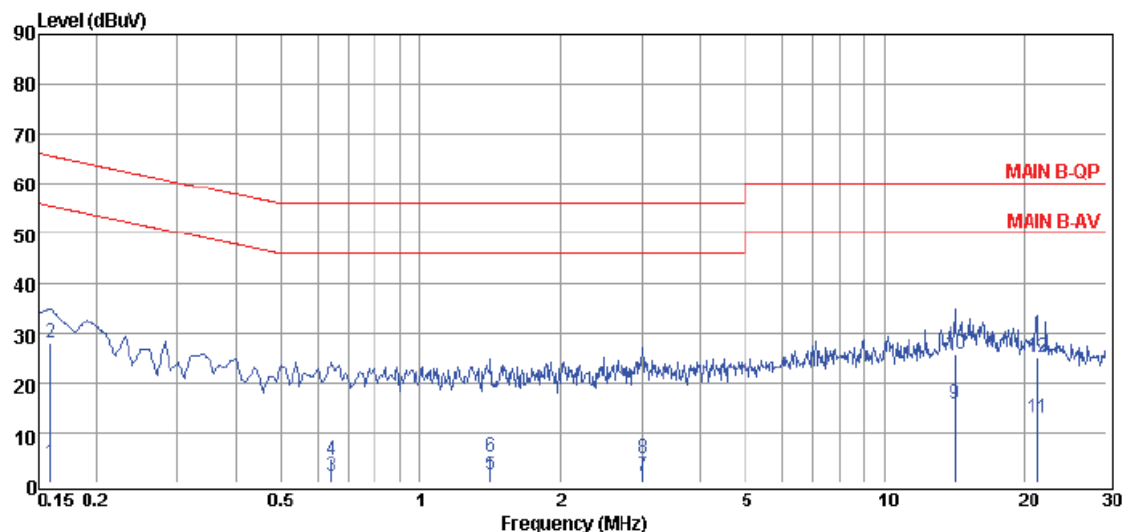
Conducted Emission Test Data-Battery mode

Test Date : 2012-07-03

Power Line : Neutral

Temperature : 25°C

Humidity : 51%



No.	Freq MHz	Reading dB μ V	C.F dB	Result dB μ V	Limit dB μ V	Margin dB	Power Line	Remark
1	0.16	3.60	0.42	4.02	55.46	-51.44	NEUTRAL	Average
2	0.16	27.60	0.42	28.02	65.46	-37.44	NEUTRAL	QP
3	0.64	0.70	0.45	1.15	46.00	-44.85	NEUTRAL	Average
4	0.64	4.30	0.45	4.75	56.00	-51.25	NEUTRAL	QP
5	1.41	0.98	0.51	1.49	46.00	-44.51	NEUTRAL	Average
6	1.41	4.70	0.51	5.21	56.00	-50.79	NEUTRAL	QP
7	3.01	0.59	0.62	1.21	46.00	-44.79	NEUTRAL	Average
8	3.01	4.29	0.62	4.91	56.00	-51.09	NEUTRAL	QP
9	14.22	15.00	1.02	16.02	50.00	-33.98	NEUTRAL	Average
10	14.22	24.80	1.02	25.82	60.00	-34.18	NEUTRAL	QP
11	21.34	11.90	1.07	12.97	50.00	-37.03	NEUTRAL	Average
12	21.34	24.20	1.07	25.27	60.00	-34.73	NEUTRAL	QP

Remark : All readings are Quasi-Peak and Average values.