## CERTIFICATION

Applicant : American Power Conversion Holding Inc. Taiwan Branch

Address : 3F., No. 205, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.

: American Power Conversion Holding Inc. Taiwan Branch Manufacturer

Address : 3F., No. 205, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.

**Description of EUT**: Uninterruptible Power System

: APC **Trade Name** 

Model Number : BE750G

Product Series : BE750XXXXXXXXXX ("X" can be 0-9, A-Z, "-" or blank)

Type of Test : FCC Part 15 Subpart B

Technical Standard : Emission

FCC Part 15: Subpart B Class A

CISPR 22: 2008 Class A

Report Number : HA160203-FD Receipt Date : 22-MAR-2016 Issue Date : 06-APR-2016 **Test Result** : Compliance

The above equipment was tested by HongAn TECHNOLOGY CO., LTD., for compliance with the requirement set forth in the FCC Rules and Regulation Part 15, Subpart B and the measurement procedures were based on ANSI C63.4.

1. The results of the test report relate only to the sample tested.

2. The test report shall not be reproduced without the written approval of HongAn TECHNOLOGY CO., LTD.

Approved by:

Adam Yang / Section Manager



HongAn TECHNOLOGY CO., LTD.

NO.15-1, CWEISHUH KENG, CWEIPIN VILLAGE,

LINKOU DIST, NEW TAIPEI CITY, TAIWAN, R.O.C.

BSMI Registration No.: SL2-IN-E-0023, SL2-IS-E-0023,

SL2-A1-E-0023, SL2-R1-E-0023,

SL2-R2-E-0023,SL2-L1-E-0023

TEL: +886-2-26030362

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FCC Designation No.: TW1071, TW1163

TAF Accreditation No.: 1163

VCCI Registration No.: R-2156, C-2329, T-219, G-696





Report No.: HA160203-FD

## FCC COMPLIANCE TEST REPORT

#### **Technical Statement of Conformity**

#### in accordance with FCC Part 15 Subpart B

#### **The Product**

**Equipment Under Test**: Uninterruptible Power System

Model Number : BE750G

: BE750XXXXXXXXX ("X" can be

0-9, A-Z, "-" or blank)

Report Number : HA160203-FD

Issue Date : 06-APR-2016

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.



## HongAn TECHNOLOGY CO., LTD.

NO.15-1, CWEISHUH KENG, CWEIPIN VILLAGE, **TEL**: +886-2-26030362 LINKOU DIST, NEW TAIPEI CITY, **FAX**: +886-2-26019259

TAIWAN, R. O. C. **E-mail**: hatlab@ms19.hinet.net

BSMI Registration No.: SL2-IN-E-0023, SL2-A1-E-0023, FCC Designation No.: TW1071, TW1163

SL2-IS-E-0023, SL2-R1-E-0023, TAF Accreditation No.: 1163

SL2-R2-E-0023, SL2-L1-E-0023 **VCCI Registration No.:** R-2156, C-2329, T-219, G-696

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## **Verification**

Report No.: HA160203-FD

**Applicant:** American Power Conversion Holding Inc. Taiwan Branch

Manufacturer: American Power Conversion Holding Inc. Taiwan Branch

**Equipment Under Test:** Uninterruptible Power System

Model Number: BE750G

**Product Series:** BE750XXXXXXXXXX ("X" can be 0-9, A-Z, "-" or blank)

Sample Received Date: 22-MAR-2016

Test Standards: 

☐ FCC Part 15 Subpart B and CISPR 22 Class A

#### Remark

This report details the results of the test carried out on one sample. The test results are contained in this test report and HongAn Technology Co., Ltd. assumes full responsibility for the accuracy and completeness of these tests. This report shows the EUT is technically compliant with FCC Part 15 Subpart B and CISPR 22 Class A 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:	Cherry Chī	Date:	06-APR-2016
	Cherry Chi / ADM. Dept. Staff		
Tested by:	M.5.5hi	Date:	01-APR-2016
	M.S.Shi / ENG. Dept. Staff		
Approved by:	Adam Jang.	Date:_	06-APR-2016
	Adam Yang / SEC. Manager		

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## **Summary of Test Result**

Report No.: HA160203-FD

Emission	Emission							
Test Standard Test Item		Test Result	Remark					
			Highest Emission (LINE Mode)					
FCC Part15			L: 0.26MHz, A.V. 60.84dBuV, Margin -5.16dBuV					
Subpart B	Conducted	Pass	N: 0.27MHz, A.V. 58.62dBuV, Margin -7.38dBuV					
CISPR22	Emission	Fa55	Highest Emission (Battery Mode)					
Class A			L: 4.75MHz, A.V. 38.60dBuV, Margin 21.40dBuV					
			N: 4.87MHz, A.V. 31.98dBuV, Margin -28.02dBuV					
			Highest Emission (LINE Mode)					
			H: 176.08MHz, 25.98dBuV, Margin -14.02dB					
			Antenna Height 400cm, Turntable Angle 35°					
FCC Part15	Radiated		V: 55.98MHz, 27.06dBuV, Margin -12.94dB					
Subpart B	Emission	Pass	Antenna Height 100cm, Turntable Angle 66°					
CISPR22	(Below 1GHz)	F a55	Highest Emission (Battery Mode)					
Class A	(Delow 1G112)		H: 32.90MHz, 23.31dBuV, Margin -16.69dB					
			Antenna Height 400cm, Turntable Angle 150°					
			V: 123.64MHz, 30.36dBuV, Margin -9.64dB					
			Antenna Height 101cm, Turntable Angle 55°					
FCC Part15	Radiated		The highest frequency of the internal sources of the					
Subpart B	Emission	N/A	EUT is less than 108MHz, the measurement shall only					
CISPR22		IN/A	be made up to 1GHz. Hence, the test item is not					
Class A (1 to 6 GHz)			required.					

## **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 Iter	Uncertainty	
Conducted En	± 4.34dB	
Radiated Emission	Below 1GHz	± 5.87dB
Radiated Ellission	Above 1GHz	± 4.03dB

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%.

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## 1 General Description

## 1.1 Description of Equipment Under Test

Equipment Under Test	:	Uninterruptible Power System						
Model Number	:	BE750G						
Product Series	:	BE750XXXXXXXXXX ("X" can be 0-9, A-Z, "-" or blank)						
Applicant	:	American Power Conversion Holding Inc. Taiwan Branch						
Address of Applicant	:	F., No. 205, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, aiwan R.O.C.						
Manufacturer	:	American Power Conversion Holding Inc. Taiwan Branch						
Address of Manufacturer	:	BF., No. 205, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan R.O.C.						
		Input : AC 120V, 12A, 60Hz, 1 $\phi$						
		Battery Backup Outlets: AC 120V, 6.25A, 60Hz, 750VA, 450W						
		Total Outlet Current: 12A						
Power Supply	:	☐Shielded						
		□Detachable ⊠Un-Detachable, 1.5m						
		□w Ferrite Core ⊠w/o Ferrite Core						
I/O Port	:	BNC*2, LAN*2, USB*1, AC Output*10						
		USB Cable						
		⊠Shielded □Non-Shielded						
		☑Detachable, 2m ☐Un-Detachable						
Data Cable	:	BNC Cable						
		⊠Shielded □Non-Shielded						
		☑Detachable, 0.9m ☐Un-Detachable						
		□w Ferrite Core ⊠w/o Ferrite Core						
		Dimensions: 35cm (L) X 18cm (W) X 9cm (H)						
		Highest Frequency of the Internal Source : <108MHz						
		Position: ⊠Table-top / □Floor-standing						
		Intended Function: The EUT is a UPS.						
Description of EUT	:	Product Variance: The manufacturer declares that the product series is						
		identical to the EUT. Different model numbers are adopted to distinguish						
		the distributing markets (countries).HongAn is only responsible for the						
		test result of the main test sample.						

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### 1.2 Test Facility

All the Conducted and Radiated Emission Tests 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 Model Mode Number		Serial Number	Last Cal. Date	Next Cal. Date
LISN	EMCO	3810/2NM	9702-1819	27-Jul-2015	27-Jul-2016
LISN	Rolf Heine Hochfrequenzt echnik	NNB-4/32T	00001	09-Mar-2016	09-Mar-2017
RF Current Probe	FCC	F-33-4	53	29-May-2015	29-May-2016
Impedance Stabilization Network (ISN)	TESEQ	ISN T800	30838	14-Aug-2015	14-Aug-2016
EMI Receiver	R&S	ESCI	100931	25-Jul-2015	25-Jul-2016
Spectrum Analyzer	ADVANTEST	R3172	101202158	21-Aug-2015	21-Aug-2016
Preamplifier	CHASE	CPA 9231A	0405	24-Aug-2015	24-Aug-2016
Preamplifier	HD	HD17187	004	01-Jun-2015	01-Jun-2016
Bilog Antenna	TESEQ	CBL6111D	25769	22-Feb-2016	22-Feb-2017
Bilog Antenna	TESEQ	CBL6111D	38521	11-Nov-2015	11-Nov-2016
Double-Ridged Waveguide Horn	EMCO	3115	9912-5992	01-Jun-2015	01-Jun-2016

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

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### 1.4 Test Methodology

All Conducted and Radiated Emission Tests were performed according to the procedures stated in FCC Part 15 Subpart B Sec. 15.31.

### 1.5 Auxiliary Equipments

1.5.1 Provided by HongAn Technology Co., Ltd. for Emission Test.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Desc	ription
NO.	Equipment	wiodei No.	Seriai No.	EWIC Approved	brand	Data Cable	Power Cable
1	1 PC	HP ProDesk	SGH528TFSC	BSMI ID 33001	Hewlett	N/A	N/A
1   PC	400G2 MT	3GH3281F3C	FCC	Packard	IN/A	IN/A	
				CE Mark,		Shielded(Foil)	
2	Keyboard	PK110U	AUT1034004409	FCC DoC,	ASUS	, ,	N/A
				BSMI ID R41108		*1.5m	
3	Mouse	M-M35-9F	LZB63801791	CE	Logitech	Unshielded*1.8m	N/A
				CE Mark,		Shielded(Braid)	Unshielded
4	Modem	E210	N/A	FCC DoC,	MAIAC	*1m	*1m
				3872B783		IIII	with EMI core*1
		1onitor U2212HM	CNI OKNIFOV C4400	CE FCC		Shielded(Braid)	
5	Monitor		CN-0KN59X-64180 -29J-0D6L		DELL	*1.8m	N/A
						with EMI core*2	
6	LAMP*2	200W	N/A	N/A	N/A	N/A	N/A
7	LAMP	40W	N/A	N/A	N/A	N/A	N/A
8	LAMP	10W	N/A	N/A	N/A	N/A	N/A
						Non-shielded,	
9	Power Cable*3	N/A	N/A	N/A	N/A	Detachable,	N/A
						1.8m, W/O core	
						Non-shielded,	
10	RJ45 Cable*2	N/A	N/A	N/A	N/A	Detachable, 1m,	N/A
						W/O core	
						Non-shielded,	
11	BNC Cable	N/A	N/A	N/A	N/A	Detachable, 1m,	N/A
						W/O core	

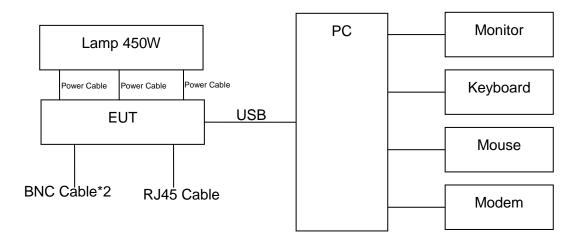
1.5.2 Provided by the Manufacturer

N/A

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#### 1.6 Block Diagram

HongAn TECHNOLOGY CO., LTD.



#### 1.7 Identifying the Final Test Mode

- 1. Line mode.
- 2. Battery mode.

#### Note:

- 1. After pre-test, we identified that the Line mode 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 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. Line mode.
- 2. Battery mode.

### 1.9 Condition of Power Supply

AC 120V, 60Hz

#### 1.10 EUT Configuration

- 3. Setup the EUT and peripheral as shown in Section 1.6.
- 4. Turn on the power of all equipments.
- 5. Activate the selected Final Test Mode shown in Sec. 1.8.

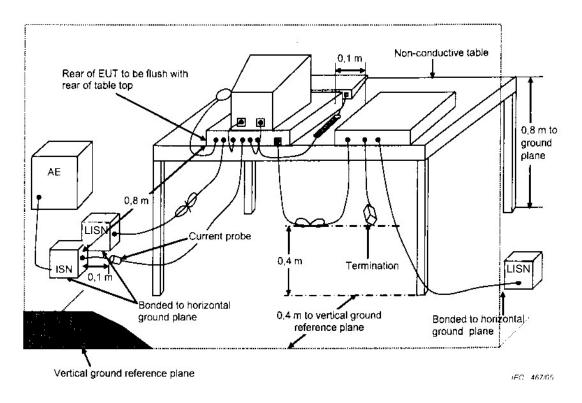
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#### 2 Conducted Emission Test

#### 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 μH 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.

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### 2.3 Conducted Limit

### ☐ CISPR 22 / FCC Part 15 B

Fragues av (MUz)	⊠ Cla	ass A	☐ Class B		
Frequency (MHz)	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)	
0.15 to 0.50	79	66	66 to 56	56 to 46	
0.50 to 5.0	50 to 5.0 73		56	46	
5.0 to 30	5.0 to 30 73		60	50	

Report No.: HA160203-FD

#### 2.4 Test Result

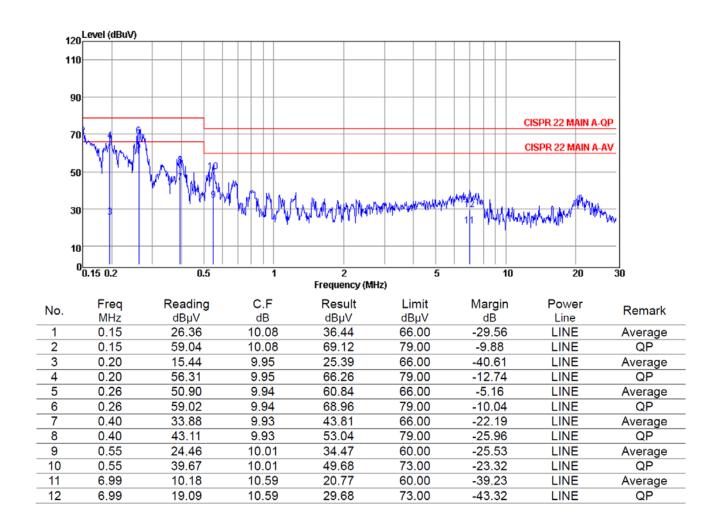
#### **PASS**

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

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#### **Conducted Emission Test Data-Line mode**



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

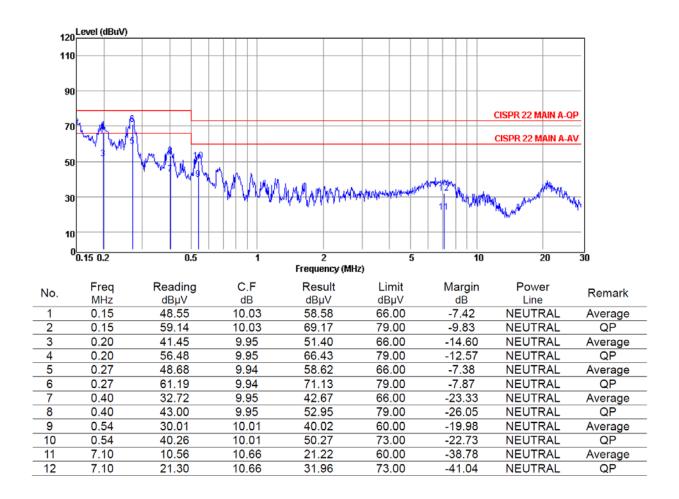
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#### **Conducted Emission Test Data-Line mode**

Test Date : 29-MAR-2016 Power Line : Neutral

Temperature :  $22.7^{\circ}$ C Humidity : 58%



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

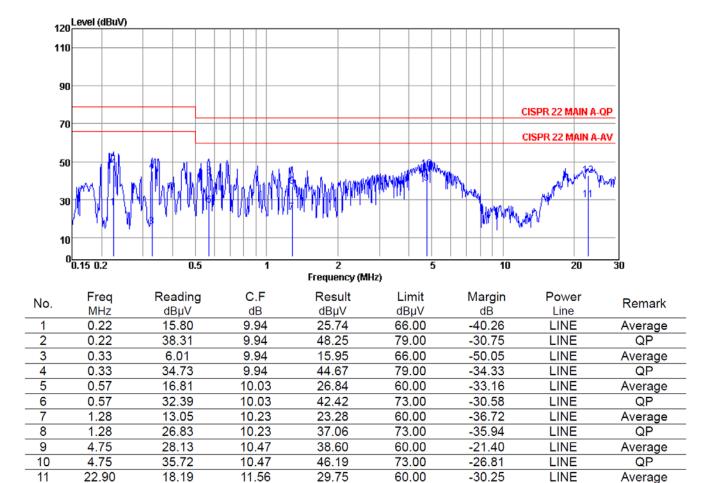
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#### **Conducted Emission Test Data-Battery mode**

Test Date : 29-MAR-2016 Power Line : Line

Temperature :  $22.7^{\circ}$ C Humidity : 58%



42.85

73.00

-30.15

LINE

QP

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

11.56

31.29

12

22.90

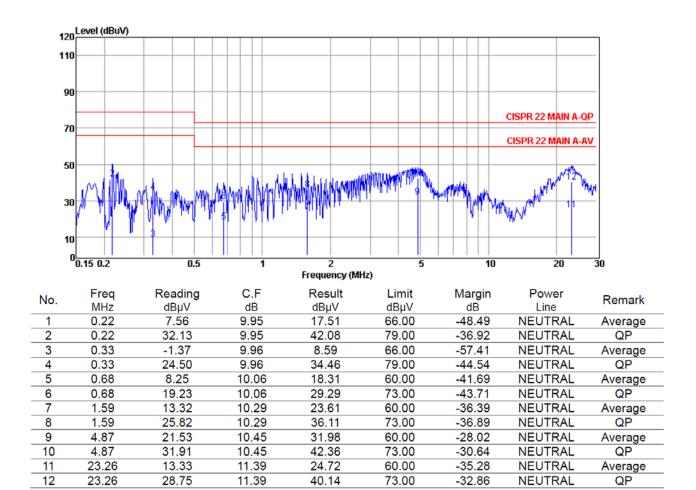
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#### **Conducted Emission Test Data-Battery mode**

Test Date : 29-MAR-2016 Power Line : Neutral

Temperature :  $22.7^{\circ}$ C Humidity : 58%



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

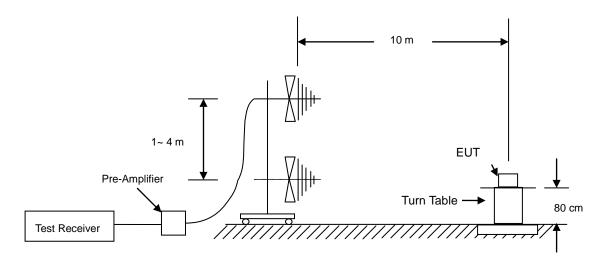
FCC Testing Report Page 14 of 30

#### 3 Radiated Emission Test – Below 1 GHz

#### 3.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

#### 3.2 Test Configuration and Procedure



#### **Table-top Equipment**

- The EUT was place on a non-conductive turntable which was 80cm above the horizontal ground plane. The EUT was set 10m away from the receiving antenna that was mounted on a non-conductive mast.
- Main cables draped to the ground plane and were routed to the mains power outlet. The
  mains power outlet was bonded to and did not protrude above the ground plane.
- The antenna was adjusted between 1m and 4m in height above the ground plane and the Antenna-to-EUT azimuth was also varied during the measurements to find the top 6 maximum meter readings within the frequency range limit as indicated in Sec 3.3.
- The radiated emissions were measured when the Antenna-to-EUT polarization was set horizontally and vertically.
- The values were recorded.

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#### 3.3 Radiated Limit

☐ FCC Part 15 B

	☐ Class	s A (10m)	☐ Class B (3m)		
Frequency	Field Strength Quasi-Peak		Field Strength	Quasi-Peak	
(MHz)	(μV/m) (dBμV/m)		(μV/m)	(dBμV/m)	
30 to 88	90	39.08	100	40.00	
88 to 216	150	43.52	150	43.52	
216 to 960	210	46.44	200	46.02	

Emission Level (dB $\mu$ V/m)=20 Log Emission Level ( $\mu$ V/m)

### ☑ CISPR 22

	☐ Class A (10m)	☐ Class B (10m)			
Frequency (MHz)	Quasi-Peak (dB <sub>μ</sub> V/m)	Quasi-Peak (dB <sub>μ</sub> V/m)			
30 to 230	40.0	30.0			
230 to 1000	47.0	37.0			

### 3.4 Test Result

#### **PASS**

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

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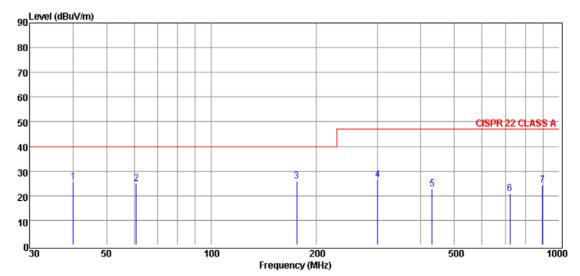


#### **Radiated Emission Test Data-Line mode**

Report No.: HA160203-FD

Test Date : 29-MAR-2016 Polarization : Horizontal

Temperature :  $22^{\circ}$ C Humidity : 57%



No.	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Antenna	Remark
NO.	MHz	dΒμV	dB	dBµV/m	dBµV/m	dB	cm	deg	Pol.	Remark
1	40.09	35.71	-10.23	25.48	40.00	-14.52	400	66	HORIZONTAL	QP
2	60.86	42.86	-17.88	24.98	40.00	-15.02	400	120	HORIZONTAL	QP
3	176.08	40.55	-14.57	25.98	40.00	-14.02	400	35	HORIZONTAL	QP
4	300.40	36.50	-10.03	26.47	47.00	-20.53	295	48	HORIZONTAL	QP
5	431.60	28.85	-6.10	22.75	47.00	-24.25	288	77	HORIZONTAL	QP
6	721.60	20.99	-0.20	20.79	47.00	-26.21	185	195	HORIZONTAL	QP
7	896.40	21.34	3.05	24.39	47.00	-22.61	152	225	HORIZONTAL	QP

Remark: All readings are Quasi-Peak values.

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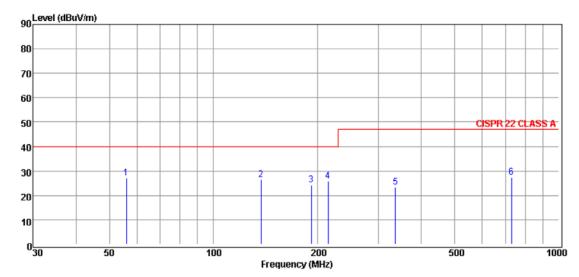


#### **Radiated Emission Test Data-Line mode**

Report No.: HA160203-FD

Test Date : 29-MAR-2016 Polarization : Vertical

Temperature :  $22^{\circ}$ C Humidity : 57%



No.	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Antenna	Remark
110	MHz	dΒμV	dB	dBµV/m	dBµV/m	dB	cm	deg	Pol.	IXEIIIAIK
1	55.98	44.11	-17.05	27.06	40.00	-12.94	100	66	VERTICAL	QP
2	137.38	38.63	-12.23	26.40	40.00	-13.60	100	74	VERTICAL	QP
3	192.03	39.07	-14.88	24.19	40.00	-15.81	103	152	VERTICAL	QP
4	214.77	40.42	-14.46	25.96	40.00	-14.04	105	52	VERTICAL	QP
5	336.00	32.24	-8.93	23.31	47.00	-23.69	115	88	VERTICAL	QP
6	729.60	27.25	0.06	27.31	47.00	-19.69	351	180	VERTICAL	QP

Remark: All readings are Quasi-Peak values.

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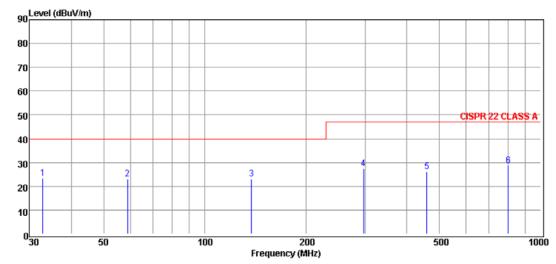


### **Radiated Emission Test Data-Battery mode**

Report No.: HA160203-FD

Test Date : 29-MAR-2016 Polarization : Horizontal

Temperature :  $22^{\circ}$ C Humidity : 57%



No	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Antenna	Remark
	MHz	dΒμV	dB	dBµV/m	dBµV/m	dB	cm	deg	Pol.	Kemark
1	32.90	29.59	-6.28	23.31	40.00	-16.69	400	150	HORIZONTAL	QP
2	58.77	40.66	-17.67	22.99	40.00	-17.01	400	44	HORIZONTAL	QP
3	137.81	35.38	-12.25	23.13	40.00	-16.87	399	83	HORIZONTAL	QP
4	297.20	37.33	-10.05	27.28	47.00	-19.72	390	59	HORIZONTAL	QP
5	458.80	31.41	<b>-</b> 5.40	26.01	47.00	-20.99	375	136	HORIZONTAL	QP
6	801.20	27.27	1.31	28.58	47.00	-18.42	122	52	HORIZONTAL	QP

Remark: All readings are Quasi-Peak values.

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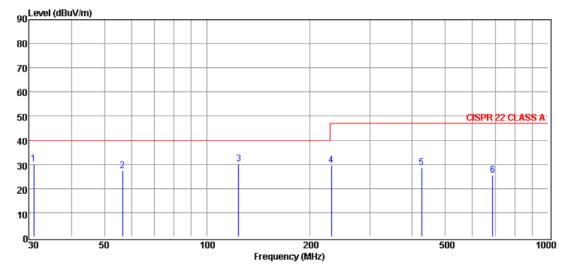


### Radiated Emission Test Data-Battery mode

Report No.: HA160203-FD

Test Date : 29-MAR-2016 Polarization : Vertical

Temperature :  $22^{\circ}$ C Humidity : 57%



No.	Freq MHz	Reading dBµV	C.F dB	Result dBµV/m	Limit dBµV/m	Margin dB	Height cm	Angle deg	Antenna Pol.	Remark
1	31.04	35.47	-5.29	30.18	40.00	-9.82	100	40	VERTICAL	QP
2	56.52	44.51	-17.17	27.34	40.00	-12.66	100	120	VERTICAL	QP
3	123.64	42.59	-12.23	30.36	40.00	-9.64	101	55	VERTICAL	QP
4	231.60	42.61	-12.94	29.67	47.00	-17.33	105	180	VERTICAL	QP
5	425.50	34.95	-6.28	28.67	47.00	-18.33	115	36	VERTICAL	QP
6	687.20	26.76	-1.08	25.68	47.00	-21.32	152	250	VERTICAL	QP

Remark: All readings are Quasi-Peak values.

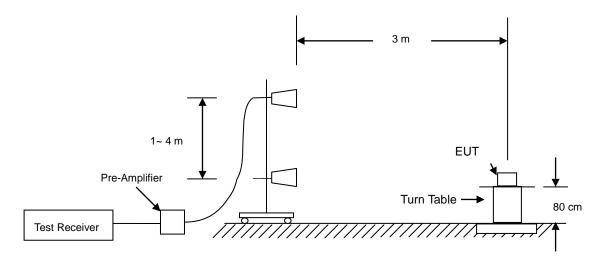
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#### 4 Radiated Emission Test – 1 to 6 GHz

#### 4.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

#### 4.2 Test Configuration and Procedure



### Table-top Equipment

- The EUT was place on a non-conductive turntable which was 80cm above the horizontal ground plane. The EUT was set 3m away from the receiving antenna that was mounted on a non-conductive mast.
- Main cables draped to the ground plane and were routed to the mains power outlet. The
  mains power outlet was bonded to and did not protrude above the ground plane.
- The antenna was adjusted between 1m and 4m in height above the ground plane and the Antenna-to-EUT azimuth was also varied during the measurements to find the top 6 maximum meter readings within the frequency range limit as indicated in Sec 4.3.
- The radiated emissions were measured when the Antenna-to-EUT polarization was set horizontally and vertically.
- The values were recorded.

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#### 4.3 Test Limit

☐ CISPR22 Class A ITE at a measurement distance of 3m

Frequency	Average limit	Peak limit				
GHz	dB(μV/m)	dB(μV/m)				
1 to 3	56	76				
3 to 6 60 80						
NOTE The lower limit applies at the transition frequency.						

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☐ CISPR22 Class B ITE at a measurement distance of 3m

Frequency	Average limit	Peak limit				
GHz	dB(μV/m)	dB(μV/m)				
1 to 3	50	70				
3 to 6 54		74				
NOTE The lower limit applies at the transition frequency.						

#### 4.4 Test Result

### Not applicable

\*The highest frequency of the internal sources of the EUT is less than 108MHz. Hence, above 1GHz Radiated Measurement shall not be made.

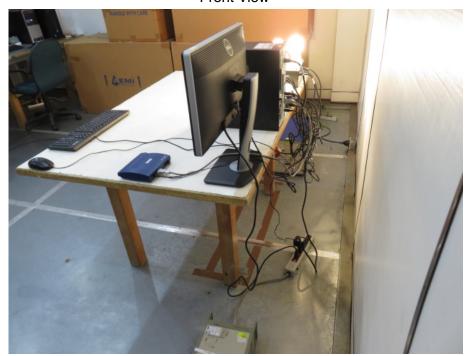
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## 5 Photographs of Test

### 5.1 Conducted Emission Test



Front View



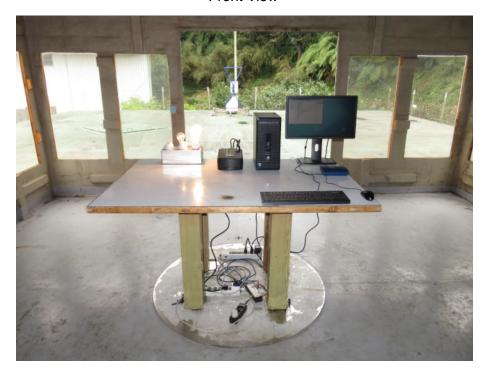
Rear View

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## 5.2 Radiated Emission Test – Below 1 GHz



Front View



Rear View

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## 6 Photographs of EUT



Front View of EUT



Rear View of EUT

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Inside View of EUT



Front View of EUT PCB 1

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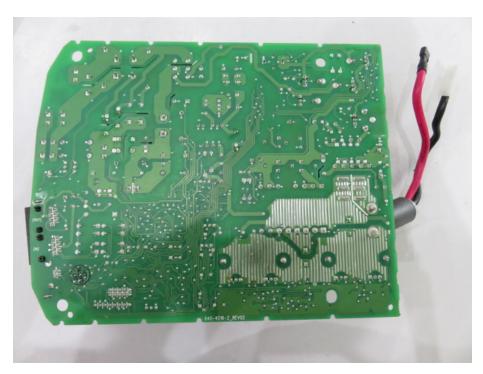


Rear View of the PCB 1

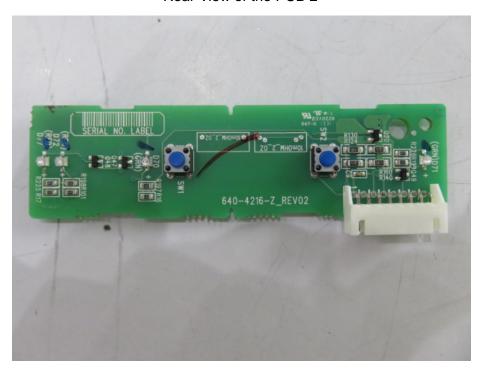


Front View of the PCB 2

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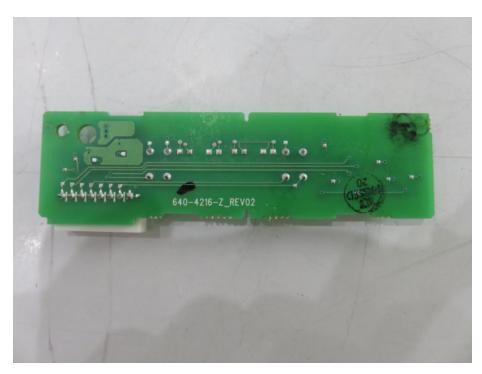


Rear View of the PCB 2



Front View of the PCB 3

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Rear View of the PCB 3

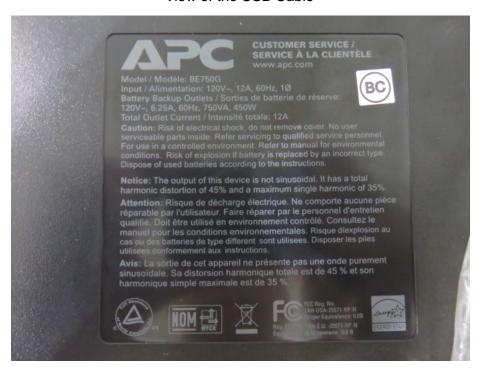


View of the BNC Cable

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View of the USB Cable



View of the EUT Label

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