9.3.2.Performance criterion : B

	Criterion B
Output characteristics	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test
Control signals to external devices	Change only temporarily in consistency with the actual Uninterruptible power systems mode of operation
Mode of operation	Change only temporarily

9.4. EUT Configuration

The configuration of EUT are listed in Section 4.3.

9.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4. except the test set up replaced by Section 9.1.

9.6. Test Procedure

9.6.1.Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.
After each discharge, the discharge electrode shall be removed from the EUT.
The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

9.6.2.Contact Discharge:

All the procedure shall be same as Section 9.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.6.3.Indirect discharge for horizontal coupling plane

At least 10 single discharges(in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit(if applicable) 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.

9.6.4.Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.7. Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Result

SHENZHEN EMTEK CO., LTD

Applicant	: SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.		Test Date	:	January 16, 2014
EUT	: Uninterruptible power systems		Temperature	:	22℃
M/N	: YDC3320H		Humidity	:	50%
Power Supply	: AC 380V/50Hz		Actual Criterion	:	B
Test Mode	: Line mode, Bat mode		Air discharge	:	±8kV
Test Engineer	: YU		Contact discharge	:	±4kV

Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Screen	A	A
Button	A	A
Slot	A	A
Metal	C	A
Screw	C	A
HCP	C	A
VCP of front	C	A
VCP of rear	C	A
VCP of left	C	A
VCP of right	C	A

Test Equipment: ESD Simulator (TESEQAG, NSG 437)

Electrostatic Discharge Test Result

SHENZHEN EMTEK CO., LTD

Applicant	:	SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.	Test Date	:	September 05, 2014
EUT	:	Uninterruptible power systems	Temperature	:	22℃
M/N	:	YDC3340H	Humidity	:	50%
Power Supply	:	AC 380V/50Hz	Actual Criterion	:	B
Test Mode	:	Line mode, Bat mode	Air discharge	:	±8kV
Test Engineer	:	KY	Contact discharge	:	±4kV

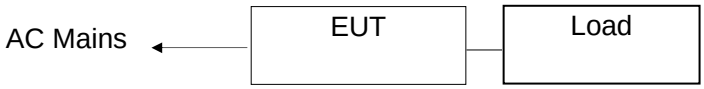
Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Screen	A	A
Button	A	A
Port	C	A
Metal	C	A
Screw	C	A
HCP	C	A
VCP of front	C	A
VCP of rear	C	A
VCP of left	C	A
VCP of right	C	A

Test Equipment: ESD Simulator (TESEQAG, NSG 437)

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

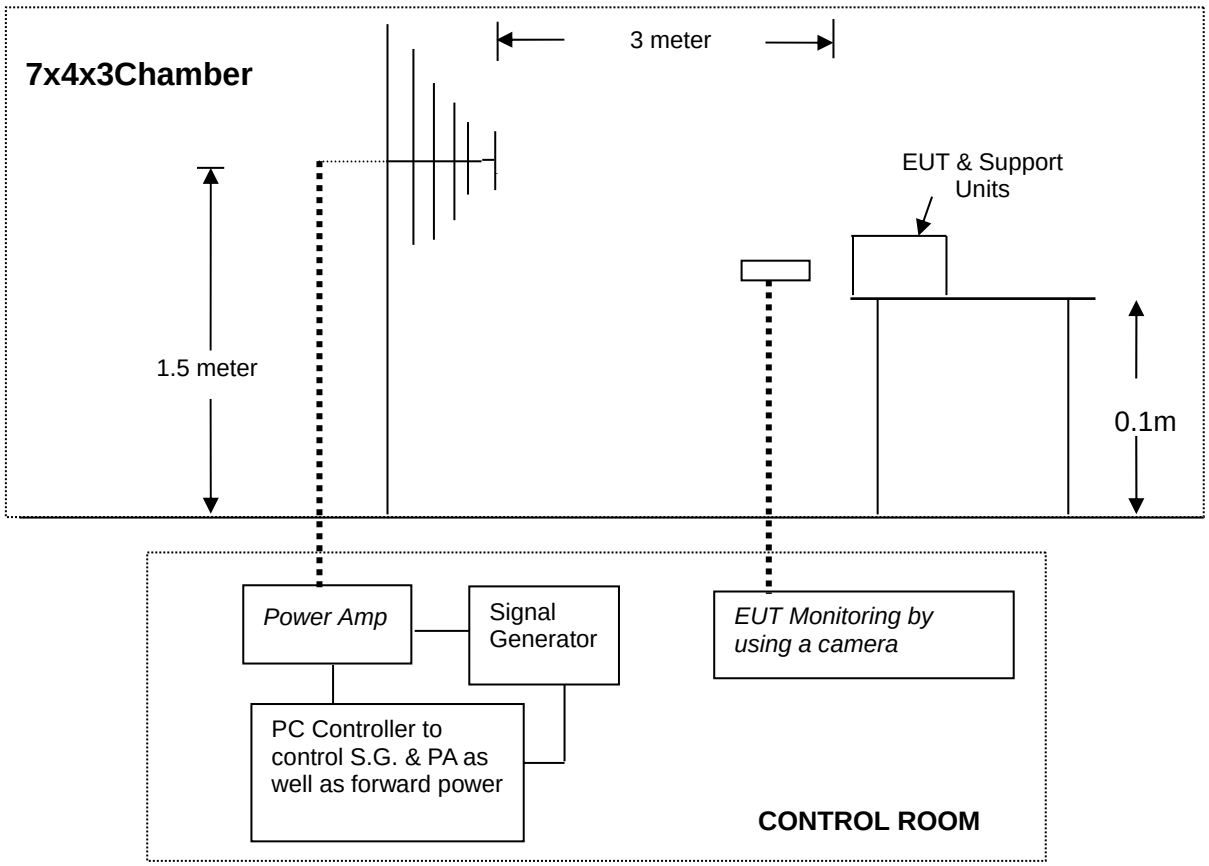
10.1.Block Diagram of Test

10.1.1.Block diagram of connection between the EUT and Load



(EUT: Uninterruptible power systems)

10.1.2.Block diagram of RS test setup



(EUT: Uninterruptible power systems)

10.2.Test Standard

IEC 61000-4-3:2006+A1:2007+A2:2010 (level 3: 10V / m)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity Levels

Level	Field Strength V/m

1.	1
2.	3
3.	10
X	Special

10.3.2. Performance Criterion : A

	Criterion A
External and internal indications and metering (LCD)	No change
Output characteristics (Load)	No change
Control signals to external devices (Signal line)	No change
Mode of operation	No change

10.4.EUT Configuration on Test

The configuration of the EUT is same as Section 4.3.

10.5.Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 4.4, except the test setup replaced as Section 10.1.

10.6.Test Procedure

The EUT is placed on a table which is 0.1m high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	10V/m
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

10.7.Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	: SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.	Test Date	: January 16, 2014
EUT	: Uninterruptible power systems	Temperature	: 22℃
M/N	: YDC3320S/H	Humidity	: 50%
Field Strength	: 10V/m	Actual Criterion	: A
Power Supply	: AC 380V/50Hz	Test Mode	: Line mode, Bat mode
Test Engineer	: YU	Frequency Range	: 80 to 1000 MHz

Modulation: ☐None ☐ Pulse ☑AM 1KHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2: N/A	
Steps	# / %		# / %	
	Horizontal	Vertical	Horizontal	Vertical
Front	A	A		
Right	A	A		
Rear	A	A		
Left	A	A		

Test Equipment **:**
1. Signal Generator: N5181A (Agilent)
2. Power Amplifier: 80RF1000-175 (MILMEGA) & AS1860-50 (MILMEGA)
3. Log.-Per. Antenna: VULP 9118E (SCHWARZBECK)
4. RF Power Meter. Dual Channel: 4232A (BOONTON)
5. Field Strength Meter: RSS1006A (DARE)

Note: /

SHENZHEN EMTEK CO., LTD.

Applicant	: SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.	Test Date	: September 05, 2014
EUT	: Uninterruptible power systems	Temperature	: 22℃
M/N	: YDC3340H	Humidity	: 50%
Field Strength	: 10V/m	Actual Criterion	: A
Power Supply	: AC 380V/50Hz	Test Mode	: Line mode, Bat mode
Test Engineer	: KY	Frequency Range	: 80 to 1000 MHz

Modulation: ☐None ☐ Pulse ☑AM 1KHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2: N/A	
Steps	# / %		# / %	
	Horizontal	Vertical	Horizontal	Vertical
Front	A	A		
Right	A	A		
Rear	A	A		
Left	A	A		

Test Equipment **:**
1. Signal Generator: N5181A (Agilent)
2. Power Amplifier: 80RF1000-175 (MILMEGA) & AS1860-50 (MILMEGA)
3. Log.-Per. Antenna: VULP 9118E (SCHWARZBECK)
4. RF Power Meter. Dual Channel: 4232A (BOONTON)
5. Field Strength Meter: RSS1006A (DARE)

Note: /

11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

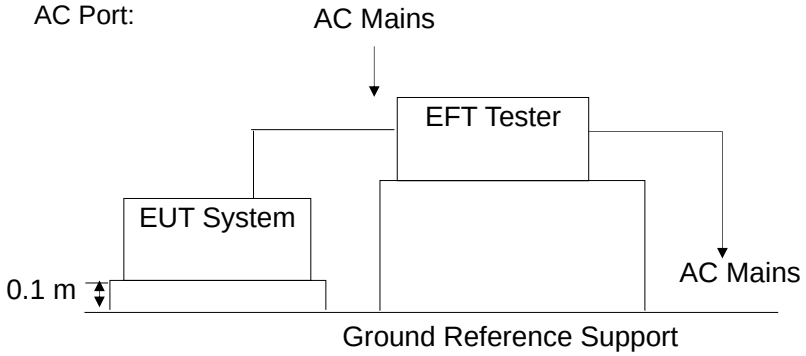
11.1.Block Diagram of Test Setup

11.1.1.Block Diagram of the EUT

(EUT: Uninterruptible power systems)

11.1.2.EFT Test Setup

AC Port:



(EUT: Uninterruptible power systems)

11.2.Test Standard

IEC 61000-4-4:2012 (Level 3: 2kV/5kHz for AC mains)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 kV	0.25 kV
2.	1 kV	0.5 kV
3.	2 kV	1 kV
4.	4 kV	2 kV
X	Special	Special

11.3.2.Performance criterion : B

	Criterion B
Output characteristics	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test
Control signals to external devices	Change only temporarily in consistency with the actual Uninterruptible power systems mode of operation
Mode of operation	Change only temporarily

11.4.EUT Configuration

The configuration of EUT is listed in Section 4.4.

11.5.Operating Condition of EUT

11.5.1.Setup the EUT as shown in Section 11.1.

11.5.2.Turn on the power of all equipments.

11.5.3.Let the EUT work in test mode (Line mode) and measure it.

11.6.Test Procedure

The EUT is put on the table which is 0.1m high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.6.2. For signal line and control lines ports:

It's unnecessary to test.

11.6.3. For DC output line ports**:**

It's unnecessary to test.

11.7.Test Result

PASS.
Please refer to the following page.

Electrical Fast Transient/Burst Test Results

SHENZHEN EMTEK CO., LTD.

Standard	IEC 61000-4-4	Result: ☒ PASS / ☐ FAIL

Applicant : SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.

EUT : Uninterruptible power systems

M/N : YDC3340H

Input Voltage : AC 380V/50Hz

Actual Criterion : B

Ambient Condition : 23 ℃ 55% RH

Operation Mode: Line mode

Line : ☒ AC input power ports and AC output power ports	Line : ☐ Signal ☐ I/O Cable
Coupling : ☒ Direct	Coupling : ☐ Capacitive
Test Time : 120s	

Line	Test Voltage	Result(+)	Result(-)
AC input power ports: L1, L2, L3, N, PE	2kV	A	A
L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N	2kV	A	A
L1-PE, L2-PE, L3-PE, N-PE	2kV	A	A
L1-L2-PE, L1-L3-PE, L2-L3-PE, L1-L2-L3, L1-L2-N, L1-L3-N, L2-L3-N, L1-N-PE, L2-N-PE, L3-N-PE	2kV	A	A
L1-L2-L3-PE, L1-L2-L3-N, L1-L2-N-PE, L1-L3-N-PE, L2-L3-N-PE	2kV	A	A
AC output power ports: L1, L2, L3, N, PE	2kV	A	A
L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N	2kV	A	A
L1-PE, L2-PE, L3-PE, N-PE	2kV	A	A
L1-L2-PE, L1-L3-PE, L2-L3-PE, L1-L2-L3, L1-L2-N, L1-L3-N, L2-L3-N, L1-N-PE, L2-N-PE, L3-N-PE	2kV	A	A
L1-L2-L3-PE, L1-L2-L3-N, L1-L2-N-PE, L1-L3-N-PE, L2-L3-N-PE	2kV	A	A

Note: /

Test Equipment	Burst Tester Model : PEFT 40100, CDN 163

Electrical Fast Transient/Burst Test Results

SHENZHEN EMTEK CO., LTD.

Standard	IEC 61000-4-4	Result: ☒ PASS / ☐ FAIL

Applicant : SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.

EUT : Uninterruptible power systems

M/N : YDC3320S/H

Input Voltage : AC 380V/50Hz

Actual Criterion : B

Ambient Condition : 23 ℃ 55% RH

Operation Mode: Line mode

Line : ☒ AC input power ports and AC output power ports	Line : ☐ Signal ☐ I/O Cable
Coupling : ☒ Direct	Coupling : ☐ Capacitive
Test Time : 120s	

Line	Test Voltage	Result(+)	Result(-)
AC input power ports: L1, L2, L3, N, PE	2kV	A	A
L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N	2kV	A	A
L1-PE, L2-PE, L3-PE, N-PE	2kV	A	A
L1-L2-PE, L1-L3-PE, L2-L3-PE, L1-L2-L3, L1-L2-N, L1-L3-N, L2-L3-N, L1-N-PE, L2-N-PE, L3-N-PE	2kV	A	A
L1-L2-L3-PE, L1-L2-L3-N, L1-L2-N-PE, L1-L3-N-PE, L2-L3-N-PE	2kV	A	A
AC output power ports: L1, L2, L3, N, PE	2kV	A	A
L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N	2kV	A	A
L1-PE, L2-PE, L3-PE, N-PE	2kV	A	A
L1-L2-PE, L1-L3-PE, L2-L3-PE, L1-L2-L3, L1-L2-N, L1-L3-N, L2-L3-N, L1-N-PE, L2-N-PE, L3-N-PE	2kV	A	A
L1-L2-L3-PE, L1-L2-L3-N, L1-L2-N-PE, L1-L3-N-PE, L2-L3-N-PE	2kV	A	A

Note: /

Test Equipment	Burst Tester Model : PEFT 40100, CDN 163

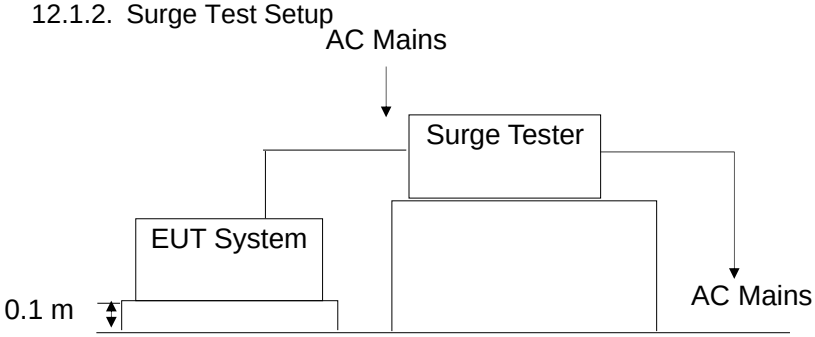
12. SURGE IMMUNITY TEST

12.1.Block Diagram of Test Setup

12.1.1.Block Diagram of the EUT

(EUT: Uninterruptible power systems)

12.1.2. Surge Test Setup



(EUT: Uninterruptible power systems)

12.2.Test Standard

IEC 61000-4-5:2014 (Line to Line: Level 2, 1.0kV, Line to earth: Level 3, 2.0kV)

12.3.Severity Levels and Performance Criterion

12.3.1.Severity level

Severity Level	Open-Circuit Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

12.3.2.Performance criterion: B

	Criterion B
Output characteristics	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test
Control signals to external devices	Change only temporarily in consistency with the actual Uninterruptible power systems mode of operation
Mode of operation	Change only temporarily

12.4.EUT Configuration

The configuration of EUT is listed in Section 4.3.

12.5.Operating Condition of EUT

12.5.1.Setup the EUT as shown in Section 12.1.

12.5.2.Turn on the power of all equipments.

12.5.3.Let the EUT work in test mode (Line mode) and measure it.

12.6.Test Procedure

1) Set up the EUT and test generator as shown on Section 12.1.2.
   For line to line coupling mode, provide 1kV 1.2/50us voltage surge.
   For line to earth mode, provide 2kV 1.2/50us voltage surge.
   (At open-circuit condition) and 8/20us current surge to EUT selected points.
2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
3) Different phase angles are done individually.
4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.7.Test Result

PASS.

Please refer to the following page.

Surge Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Applicant	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.	Test Date	:	January 16, 2014
EUT	:	Uninterruptible power systems	Temperature	:	23℃
M/N	:	YDC3320S/H	Humidity	:	51%
Power Supply	:	AC 380V/50Hz	Test Mode	:	Line mode
Test Engineer	:	YU	Actual Criterion	:	B

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
AC Input: L1-L2, L1-L3, L2-L3	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-N, L2-N, L3-N	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-PE, L2-PE, L3-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A
N-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A
AC Output: L1-L2, L1-L3, L2-L3	+	Random	5	1.0	A
	-	Random	5	1.0	A
L1-PE, L2-PE, L3-PE	+	Random	5	1.0	A
	-	Random	5	1.0	A
L1-PE, L2-PE, L3-PE	+	Random	5	2.0	A
	-	Random	5	2.0	A
N-PE	+	Random	5	2.0	A
	-	Random	5	2.0	A

Remark: /	Test Equipment model: Psurge 8000, PIM 100, PCD 130

Surge Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Applicant	: SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.	Test Date	: September 05, 2014
EUT	: Uninterruptible power systems	Temperature	: 23℃
M/N	: YDC3340H	Humidity	: 51%
Power Supply	: AC 380V/50Hz	Test Mode	: Line mode
Test Engineer	: KY	Actual Criterion	: B

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
AC Input: L1-L2, L1-L3, L2-L3	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-N, L2-N, L3-N	+	0°, 90°, 180°, 270°	5	1.0	A
	-	0°, 90°, 180°, 270°	5	1.0	A
L1-PE, L2-PE, L3-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A
N-PE	+	0°, 90°, 180°, 270°	5	2.0	A
	-	0°, 90°, 180°, 270°	5	2.0	A
AC Output: L1-L2, L1-L3, L2-L3	+	Random	5	1.0	A
	-	Random	5	1.0	A
L1-PE, L2-PE, L3-PE	+	Random	5	1.0	A
	-	Random	5	1.0	A
L1-PE, L2-PE, L3-PE	+	Random	5	2.0	A
	-	Random	5	2.0	A
N-PE	+	Random	5	2.0	A
	-	Random	5	2.0	A

Remark: /

Test Equipment model:
Psurge 8000, PIM 100, PCD 130

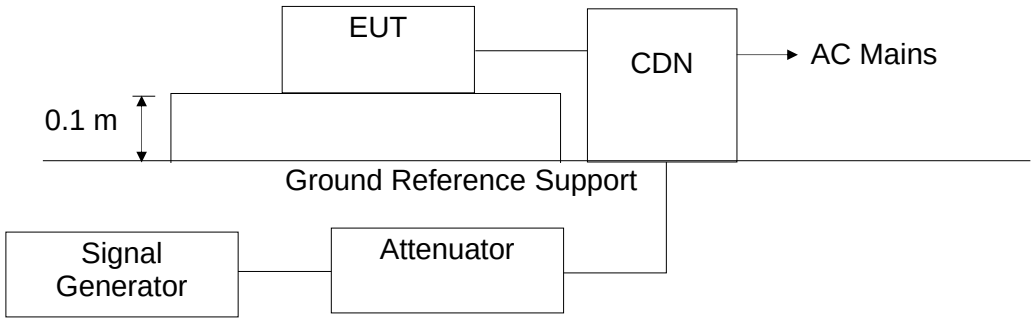
13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1. Block Diagram of Test Setup

13.1.1. Block Diagram of the EUT

(EUT: Uninterruptible power systems)

13.1.2. Block Diagram of Test Setup



13.2. Test Standard

IEC 61000-4-6:2008 (Level 3: 10V (rms) (0.15MHz ~ 80MHz))

13.3. Severity Levels and Performance Criterion

13.3.1. Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

13.3.2. Performance criterion: A

	Criterion A
External and internal indications and metering (LCD)	No change
Output characteristics (Load)	No change
Control signals to external devices (Signal line)	No change
Mode of operation	No change

13.4.EUT Configuration

The configuration of EUT is listed in Section 4.3.

13.5.Operating Condition of EUT

13.5.1.Setup the EUT as shown in Section 13.1.

13.5.2.Turn on the power of all equipments.

13.5.3.Let the EUT work in test mode (Line mode) and measure it.

13.6.Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 13.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 150KHz to80MHz using 10V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7) The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.7.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	: SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.	Test Date	: January 16, 2014
EUT	: Uninterruptible power systems	Temperature	: 23℃
M/N	: YDC3320S/H	Humidity	: 50%
Power Supply	: AC 380V/50Hz	Actual Criterion	: A
Test Engineer	: YU		

Test Mode **:** Line mode

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Input	10V	A	A
0.15 ~ 80	AC Output	10V	A	A

Remark **:** 1. Modulation Signal**:**1KHz 80% AM
Measurement Equipment :
Simulator: CWS 500 (SWITZERLAND EMTEST)
CDN : ☐ CDN-M2 (SWITZERLAND EMTEST)
☒ CDN-M3 (SWITZERLAND EMTEST)
☐ Injection Clamp (EMTEST F-2031-23MM)

Note**: /**

Injected Currents Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	:	SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.	Test Date	:	September 05, 2014
EUT	:	Uninterruptible power systems	Temperature	:	23℃
M/N	:	YDC3340H	Humidity	:	50%
Power Supply	:	AC 380V/50Hz	Actual Criterion	:	A
Test Engineer	:	KY			

Test Mode **:** Line mode

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Input	10V	A	A
0.15 ~ 80	AC Output	10V	A	A

Remark **:** 1. Modulation Signal**:**1KHz 80% AM
Measurement Equipment :
Simulator: CIT-10 (FRANKONIA)
CDN : ☐ CDN-M2 (SWITZERLAND EMTEST)
☐ CDN-M3 (SWITZERLAND EMTEST)
☐ Injection Clamp (EMTEST F-2031-23MM)
☒ CDN-M532S(Teseq)

Note**: /**

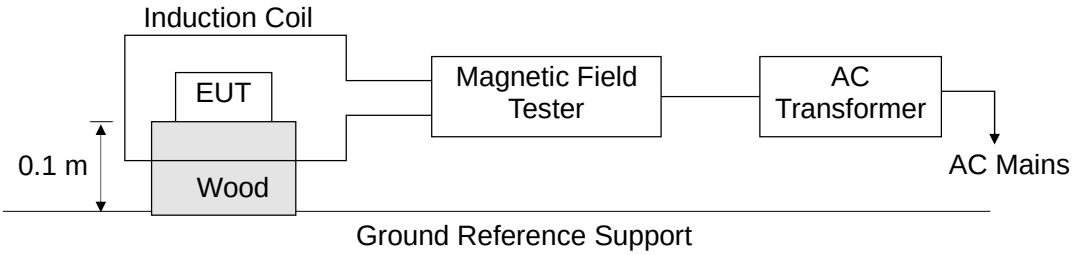
14. MAGNETIC FIELD SUSCEPTIBILITY TEST

14.1.Block Diagram of Test

14.1.1.Block diagram of test setup

(EUT: Uninterruptible power systems)

14.1.2.Magnetic field test setup



(EUT: Uninterruptible power systems)

14.2.Test Standard

IEC 61000-4-8:2009, (Severity Level 4: 30A / m)

14.3.Severity Levels and Performance Criterion

14.3.1.Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

14.3.2.Performance Criterion: A

	Criterion A
Output characteristics	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test
Control signals to external devices	Change only temporarily in consistency with the actual Uninterruptible power systems mode of operation
Mode of operation	Change only temporarily

14.4.EUT Configuration on Test

The configuration of the EUT is same as Section 4.3.

14.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.1 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

14.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Standard	IEC 61000-4-8	Result: ☒ Pass / ☐ Fail

Applicant : SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.

EUT : Uninterruptible power systems M/N : YDC3340H

Input Voltage : AC 380V/50Hz

Date of Test : September 05, 2014 Test Engineer : KY

Ambient Condition : Temp : 22℃ Humid : 50%

Actual Criterion : A

Operation Mode : Line mode, Bat mode

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	A
30	5 mins	Y	A	A
30	5 mins	Z	A	A

Operation Mode : N/A

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result

Test Equipment	Magnetic Field Test : HEAFELY MAG 100.1

Note: /

Magnetic Field Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Standard	IEC 61000-4-8	Result: ☒ Pass / ☐ Fail

Applicant : SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.

EUT : Uninterruptible power systems M/N : YDC3320S/H

Input Voltage : AC 380V/50Hz

Date of Test : January 16, 2014 Test Engineer : YU

Ambient Condition : Temp : 22℃ Humid : 50%

Actual Criterion : A

Operation Mode : Line mode, Bat mode

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	A
30	5 mins	Y	A	A
30	5 mins	Z	A	A

Operation Mode : N/A

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result

Test Equipment	Magnetic Field Test : HEAFELY MAG 100.1

Note: /

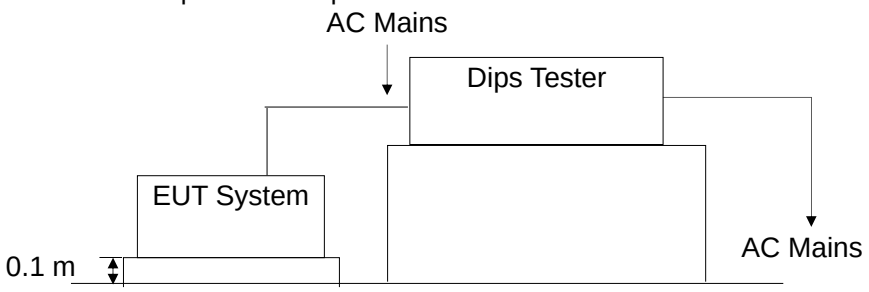
15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1. Block Diagram of Test Setup

15.1.1. Block Diagram of the EUT

(EUT: Uninterruptible power systems)

15.1.2. Dips Test Setup



(EUT: Uninterruptible power systems)

15.2. Test Standard

IEC 61000-4-11:2004

15.3. Severity Levels and Performance Criterion

15.3.1. Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10 25 50 *
40	60	
70	30	

15.3.2.Performance criterion: B

	Criterion B
Output characteristics	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test
Control signals to external devices	Change only temporarily in consistency with the actual Uninterruptible power systems mode of operation
Mode of operation	Change only temporarily

15.4.EUT Configuration

The configuration of EUT is listed in Section 4.3.

15.5.Operating Condition of EUT

15.5.1.Setup the EUT as shown in Section 15.1.

15.5.2.Turn on the power of all equipments.

15.5.3.Let the EUT work in test mode (Line mode) and measure it.

15.6.Test Procedure

1) Set up the EUT and test generator as shown on Section 15.1.2.
2) The interruption is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

15.7.Test Result

PASS.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	:	SHENZHEN KSTAR SCIENCE & TECHNOLOGY CO., LTD.	Test Date	:	September 05, 2014
EUT	:	Uninterruptible power systems	Temperature	:	22℃
M/N	:	YDC3340H	Humidity	:	50%
Power Supply	:	AC 380V/50Hz	Test Engineer	:	KY

Test Mode: Line mode

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐ A ☒ B ☐ C ☐ D	Result
0	100	0.5P	B	A
40	60	10P	B	A
70	30	25P	B	A
0	100	250P	B	B

Note: Test in 0%, 250P, light appears flicker, but can self-recovery.

Voltage Dips And Interruptions Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.	Test Date	:	January 16, 2014
EUT	:	Uninterruptible power systems	Temperature	:	22℃
M/N	:	YDC3320S/H	Humidity	:	50%
Power Supply	:	AC 380V/50Hz	Test Engineer	:	YU

Test Mode: Line mode

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐ A ☒ B ☐ C ☐ D	Result
0	100	0.5P	B	A
40	60	10P	B	A
70	30	25P	B	A
0	100	250P	B	B

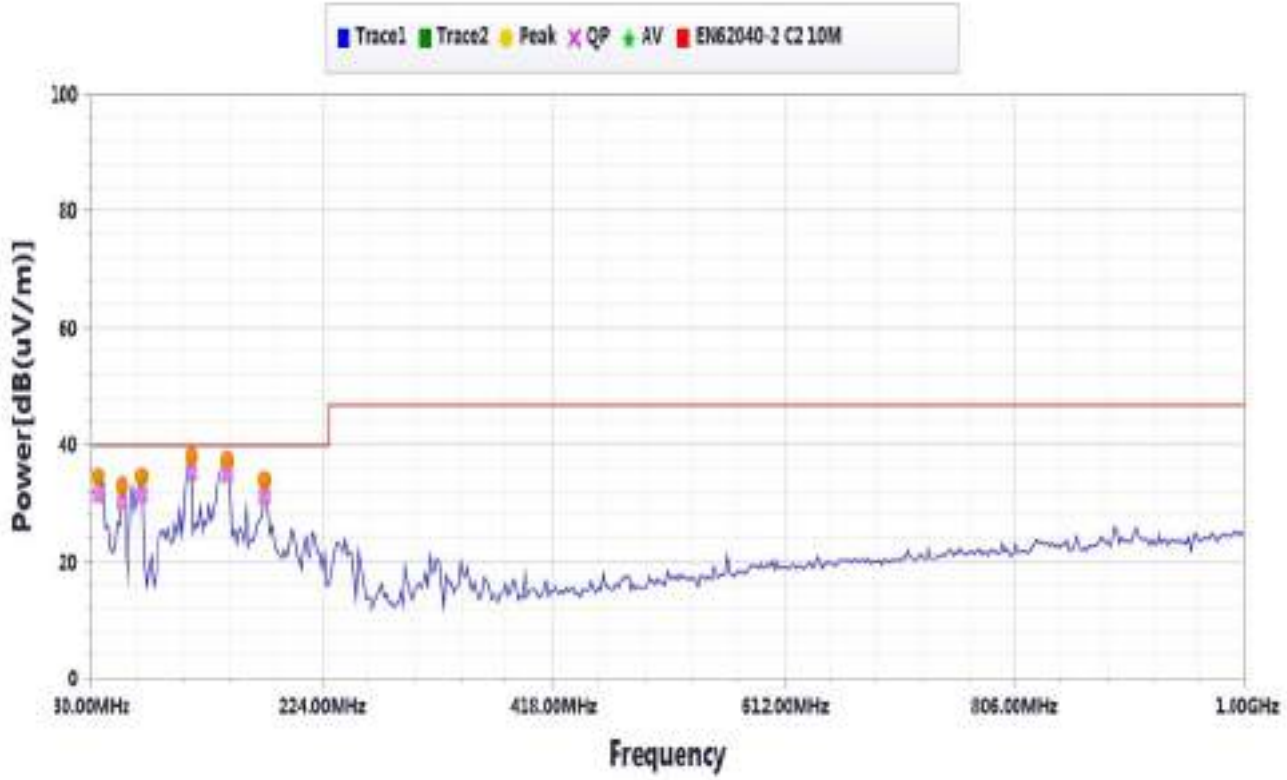
Note: Test in 0%, 250P, light appears flicker, but can self-recovery.

Data: 6

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Vertical
Tester: CSL	Model: YDC3340H	Mode: FULL LOAD
Test Time:2014/8/22 13:34	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:BAT MODE		

2. Chart

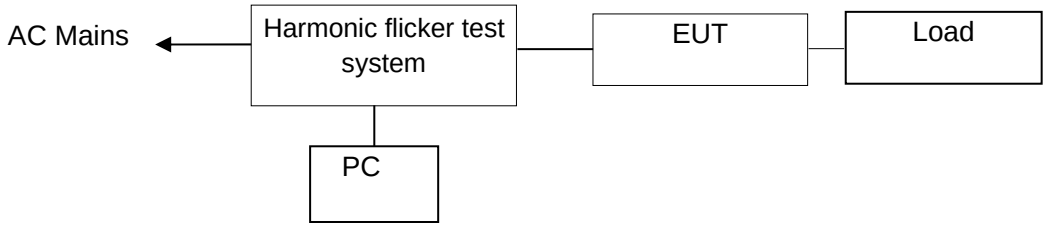


3. Result

No	Frequency	QP	Correct factor	Reading level	Limit1	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	Degree	cm	
1	36.78	31.6	-31.47	63.07	40	-8.4			Pass
2	56.14	30.2	-30.01	60.21	40	-9.8			Pass
3	73.56	31.4	-34.68	66.08	40	-8.6			Pass
4	114.22	35.2	-31.25	66.45	40	-4.8			Pass
5	145.20	34.9	-34.37	69.27	40	-5.1			Pass
6	176.18	31.2	-32.42	63.62	40	-8.8			Pass

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



(EUT: Uninterruptible power systems)

6.2. Measuring Standard

EN 61000-3-12: 2011 CLASS A

6.3. Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 6.1.

6.4. Measuring Results

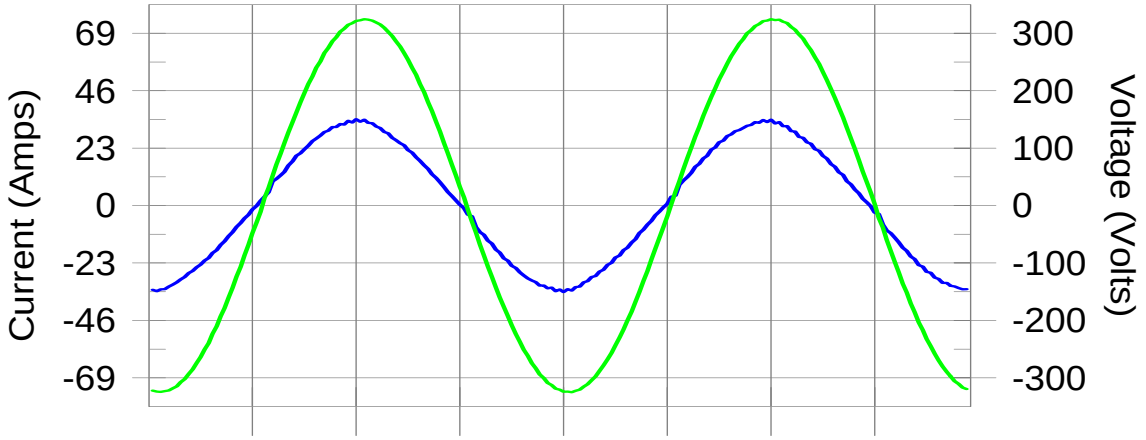
PASS.

Please see the attached pages.

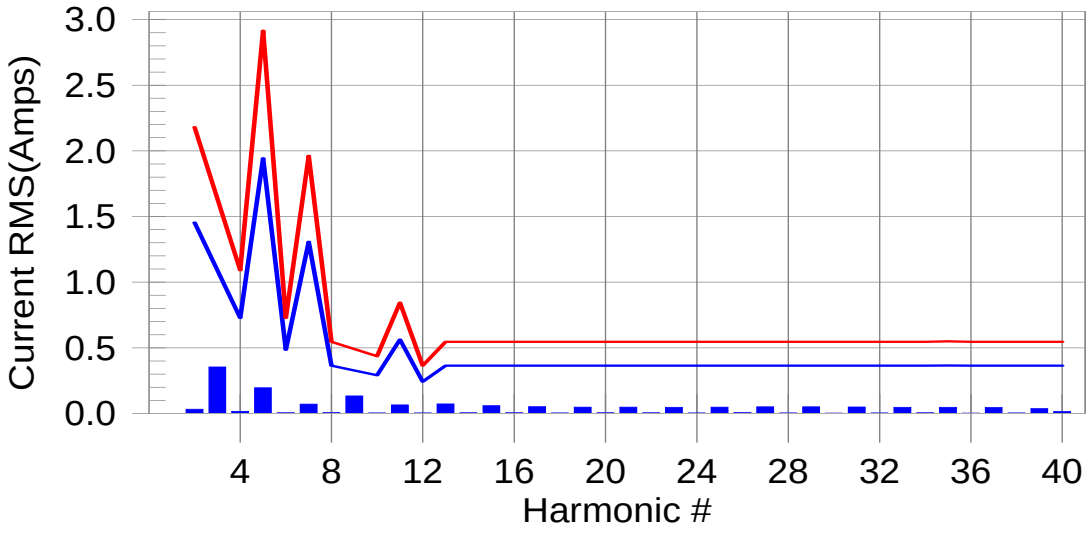
EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 18.64 % of the limit.**

Current Test Result Summary (Phase A-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.529 **Limit(%): 13.000** **PWHD(%): 4.603** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**35.031**	**I_RMS (Amps):**	**23.382**
I_1-Ref (Amps):	**18.354**	**Crest Factor:**	**1.701**
Power (Watts):	**5326**	**Power Factor:**	**0.995**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.026	1.453	1.8	0.032	2.180	1.47	Pass
3	0.342	N/A	N/A	0.355	N/A	N/A	N/A
4	0.013	0.727	1.8	0.016	1.090	1.49	Pass
5	0.193	1.944	9.9	0.196	2.916	6.72	Pass
6	0.004	0.484	0.9	0.005	0.727	0.76	Pass
7	0.067	1.308	5.1	0.072	1.962	3.65	Pass
8	0.004	0.363	1.2	0.007	0.545	1.27	Pass
9	0.131	N/A	N/A	0.134	N/A	N/A	N/A
10	0.003	0.291	1.0	0.004	0.436	1.02	Pass
11	0.059	0.563	10.4	0.066	0.845	7.77	Pass
12	0.003	0.242	1.4	0.005	0.363	1.34	Pass
13	0.068	0.363	18.6	0.073	0.545	13.31	Pass
14	0.003	N/A	N/A	0.006	N/A	N/A	N/A
15	0.055	N/A	N/A	0.059	N/A	N/A	N/A
16	0.003	N/A	N/A	0.006	N/A	N/A	N/A
17	0.048	N/A	N/A	0.052	N/A	N/A	N/A
18	0.003	N/A	N/A	0.004	N/A	N/A	N/A
19	0.044	N/A	N/A	0.049	N/A	N/A	N/A
20	0.004	N/A	N/A	0.005	N/A	N/A	N/A
21	0.044	N/A	N/A	0.049	N/A	N/A	N/A
22	0.004	N/A	N/A	0.005	N/A	N/A	N/A
23	0.043	N/A	N/A	0.048	N/A	N/A	N/A
24	0.004	N/A	N/A	0.005	N/A	N/A	N/A
25	0.043	N/A	N/A	0.048	N/A	N/A	N/A
26	0.003	N/A	N/A	0.007	N/A	N/A	N/A
27	0.045	N/A	N/A	0.050	N/A	N/A	N/A
28	0.003	N/A	N/A	0.005	N/A	N/A	N/A
29	0.048	N/A	N/A	0.052	N/A	N/A	N/A
30	0.003	N/A	N/A	0.004	N/A	N/A	N/A
31	0.045	N/A	N/A	0.049	N/A	N/A	N/A
32	0.004	N/A	N/A	0.005	N/A	N/A	N/A
33	0.043	N/A	N/A	0.047	N/A	N/A	N/A
34	0.003	N/A	N/A	0.005	N/A	N/A	N/A
35	0.045	N/A	N/A	0.048	N/A	N/A	N/A
36	0.003	N/A	N/A	0.004	N/A	N/A	N/A
37	0.044	N/A	N/A	0.046	N/A	N/A	N/A
38	0.003	N/A	N/A	0.005	N/A	N/A	N/A
39	0.036	N/A	N/A	0.037	N/A	N/A	N/A
40	0.010	N/A	N/A	0.015	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase A-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

Voltage (Vrms):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**35.031**	**I_RMS (Amps):**	**23.382**
I_1-Ref (Amps):	**18.354**	**Crest Factor:**	**1.701**
Power (Watts):	**5326**	**Power Factor:**	**0.995**

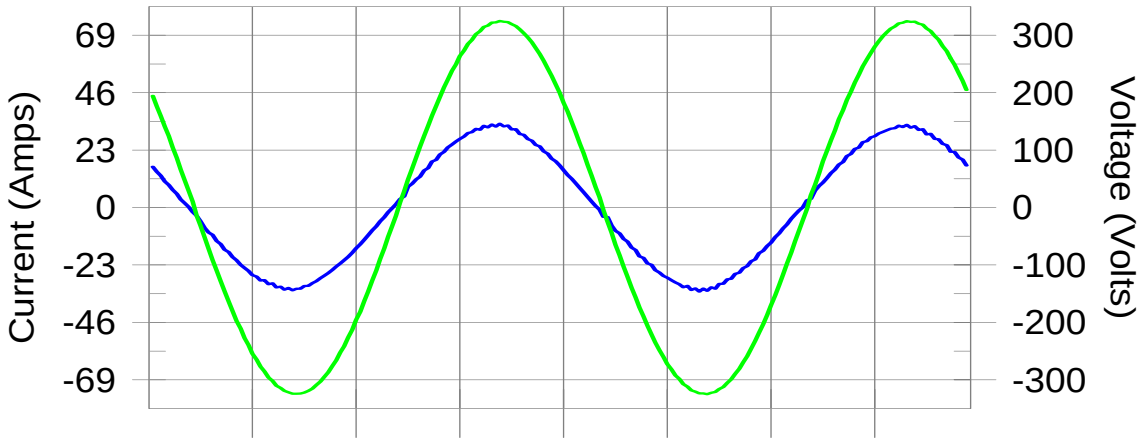
Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.316	0.918	34.45	OK
3	0.164	2.868	5.72	OK
4	0.027	0.918	2.95	OK
5	0.120	3.440	3.49	OK
6	0.007	0.918	0.74	OK
7	0.118	2.868	4.10	OK
8	0.013	0.918	1.38	OK
9	0.184	1.376	13.39	OK
10	0.011	0.918	1.22	OK
11	0.118	1.605	7.37	OK
12	0.013	0.688	1.83	OK
13	0.126	1.376	9.13	OK
14	0.012	0.688	1.78	OK
15	0.107	0.688	15.62	OK
16	0.014	0.688	1.98	OK
17	0.088	0.688	12.82	OK
18	0.017	0.688	2.45	OK
19	0.073	0.688	10.60	OK
20	0.023	0.688	3.33	OK
21	0.076	0.688	11.09	OK
22	0.014	0.688	1.99	OK
23	0.085	0.688	12.36	OK
24	0.015	0.688	2.17	OK
25	0.098	0.688	14.19	OK
26	0.015	0.688	2.16	OK
27	0.116	0.688	16.79	OK
28	0.013	0.688	1.90	OK
29	0.118	0.688	17.14	OK
30	0.015	0.688	2.20	OK
31	0.108	0.688	15.66	OK
32	0.017	0.688	2.46	OK
33	0.117	0.688	17.01	OK
34	0.015	0.688	2.19	OK
35	0.114	0.688	16.57	OK
36	0.016	0.688	2.27	OK
37	0.114	0.688	16.60	OK
38	0.017	0.688	2.43	OK
39	0.099	0.688	14.34	OK
40	0.024	0.688	3.43	OK

Harmonics – Per EN/IEC61000-3-12(Phase B-Run time)

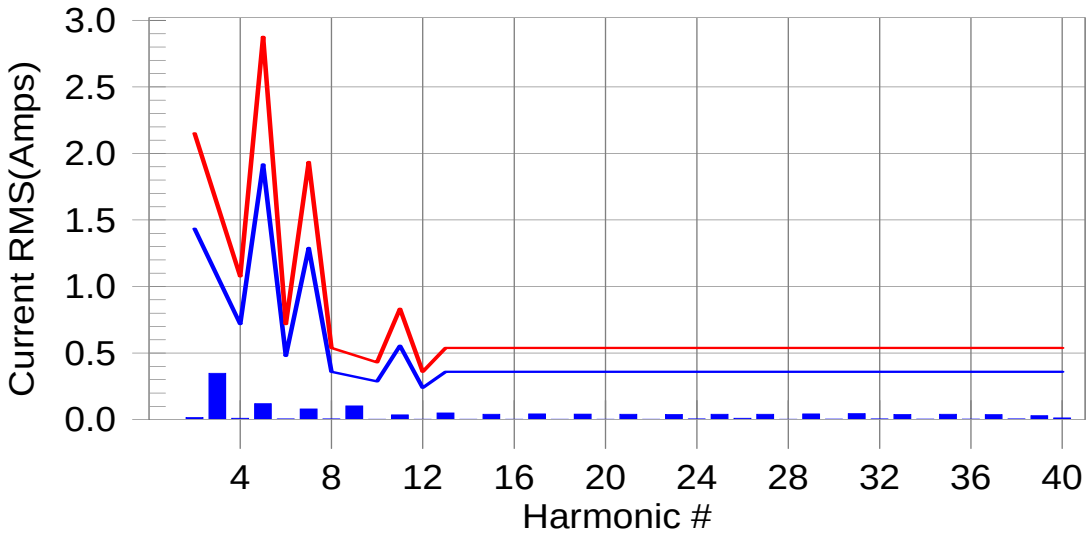
EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 12.60 % of the limit.**

Current Test Result Summary (Phase B-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.267 **Limit(%): 13.000** **PWHD(%): 3.866** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.55**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**33.975**	**I_RMS (Amps):**	**22.667**
I_1-Ref (Amps):	**18.086**	**Crest Factor:**	**1.672**
Power (Watts):	**5175**	**Power Factor:**	**0.997**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.011	1.434	0.8	0.016	2.151	0.73	Pass
3	0.342	N/A	N/A	0.348	N/A	N/A	N/A
4	0.009	0.717	1.2	0.011	1.076	1.02	Pass
5	0.117	1.918	6.1	0.120	2.878	4.17	Pass
6	0.004	0.478	0.9	0.006	0.717	0.78	Pass
7	0.078	1.291	6.0	0.081	1.936	4.16	Pass
8	0.004	0.359	1.1	0.006	0.538	1.03	Pass
9	0.131	N/A	N/A	0.103	N/A	N/A	N/A
10	0.003	0.287	0.9	0.004	0.430	0.82	Pass
11	0.031	0.556	5.5	0.036	0.834	4.26	Pass
12	0.002	0.239	0.9	0.003	0.359	0.96	Pass
13	0.045	0.359	12.6	0.050	0.538	9.30	Pass
14	0.003	N/A	N/A	0.004	N/A	N/A	N/A
15	0.036	N/A	N/A	0.040	N/A	N/A	N/A
16	0.003	N/A	N/A	0.004	N/A	N/A	N/A
17	0.037	N/A	N/A	0.043	N/A	N/A	N/A
18	0.003	N/A	N/A	0.004	N/A	N/A	N/A
19	0.037	N/A	N/A	0.042	N/A	N/A	N/A
20	0.003	N/A	N/A	0.003	N/A	N/A	N/A
21	0.035	N/A	N/A	0.041	N/A	N/A	N/A
22	0.002	N/A	N/A	0.003	N/A	N/A	N/A
23	0.035	N/A	N/A	0.039	N/A	N/A	N/A
24	0.004	N/A	N/A	0.005	N/A	N/A	N/A
25	0.037	N/A	N/A	0.041	N/A	N/A	N/A
26	0.004	N/A	N/A	0.010	N/A	N/A	N/A
27	0.038	N/A	N/A	0.041	N/A	N/A	N/A
28	0.003	N/A	N/A	0.004	N/A	N/A	N/A
29	0.039	N/A	N/A	0.043	N/A	N/A	N/A
30	0.003	N/A	N/A	0.005	N/A	N/A	N/A
31	0.042	N/A	N/A	0.045	N/A	N/A	N/A
32	0.004	N/A	N/A	0.006	N/A	N/A	N/A
33	0.037	N/A	N/A	0.039	N/A	N/A	N/A
34	0.004	N/A	N/A	0.005	N/A	N/A	N/A
35	0.040	N/A	N/A	0.042	N/A	N/A	N/A
36	0.003	N/A	N/A	0.005	N/A	N/A	N/A
37	0.036	N/A	N/A	0.038	N/A	N/A	N/A
38	0.004	N/A	N/A	0.006	N/A	N/A	N/A
39	0.028	N/A	N/A	0.029	N/A	N/A	N/A
40	0.008	N/A	N/A	0.012	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase B-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

Voltage (Vrms):	**229.55**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**33.975**	**I_RMS (Amps):**	**22.667**
I_1-Ref (Amps):	**18.086**	**Crest Factor:**	**1.672**
Power (Watts):	**5175**	**Power Factor:**	**0.997**

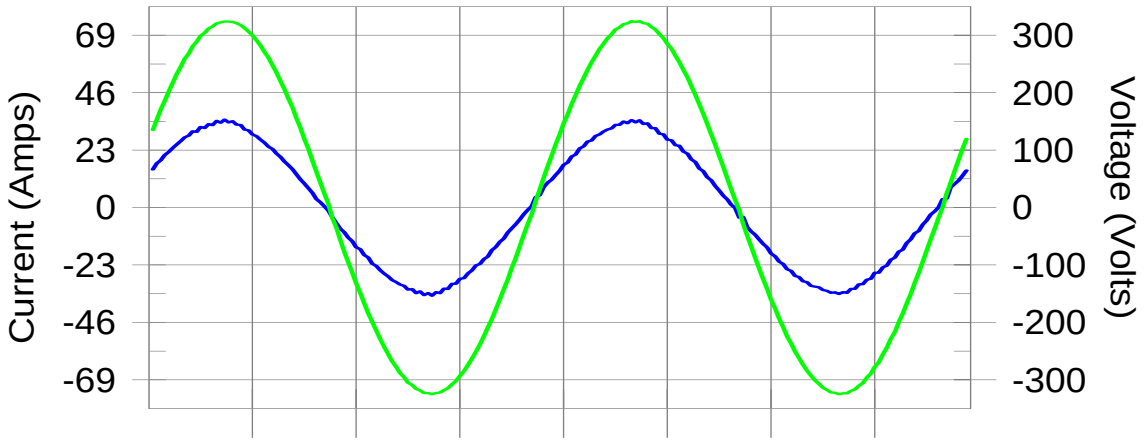
Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.306	0.918	33.36	OK
3	0.155	2.869	5.39	OK
4	0.027	0.918	2.92	OK
5	0.123	3.443	3.58	OK
6	0.013	0.918	1.46	OK
7	0.121	2.869	4.22	OK
8	0.018	0.918	1.93	OK
9	0.167	1.376	12.11	OK
10	0.010	0.918	1.12	OK
11	0.125	1.607	7.77	OK
12	0.015	0.688	2.21	OK
13	0.119	1.376	8.68	OK
14	0.016	0.688	2.33	OK
15	0.107	0.688	15.60	OK
16	0.018	0.689	2.56	OK
17	0.090	0.688	13.01	OK
18	0.015	0.688	2.11	OK
19	0.079	0.688	11.44	OK
20	0.012	0.688	1.79	OK
21	0.079	0.688	11.54	OK
22	0.013	0.689	1.83	OK
23	0.089	0.689	12.96	OK
24	0.019	0.689	2.72	OK
25	0.098	0.689	14.27	OK
26	0.017	0.688	2.43	OK
27	0.108	0.689	15.74	OK
28	0.014	0.688	2.02	OK
29	0.106	0.688	15.37	OK
30	0.017	0.688	2.41	OK
31	0.112	0.688	16.24	OK
32	0.020	0.688	2.85	OK
33	0.120	0.688	17.46	OK
34	0.017	0.688	2.50	OK
35	0.112	0.688	16.33	OK
36	0.014	0.689	2.09	OK
37	0.103	0.688	14.92	OK
38	0.015	0.689	2.21	OK
39	0.091	0.688	13.17	OK
40	0.019	0.689	2.76	OK

Harmonics – Per EN/IEC61000-3-12(Phase C-Run time)

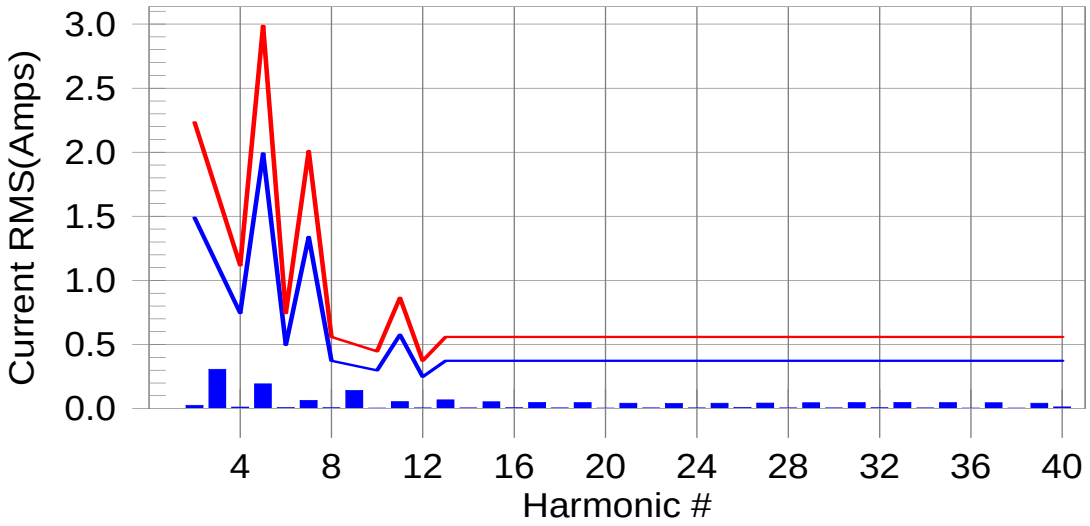
EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 17.28 % of the limit.**

Current Test Result Summary (Phase C-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.254 **Limit(%): 13.000** **PWHD(%): 4.258** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**35.707**	**I_RMS (Amps):**	**23.775**
I_1-Ref (Amps):	**18.785**	**Crest Factor:**	**1.656**
Power (Watts):	**5430**	**Power Factor:**	**0.997**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.021	1.489	1.4	0.026	2.234	1.18	Pass
3	0.342	N/A	N/A	0.307	N/A	N/A	N/A
4	0.010	0.745	1.3	0.012	1.117	1.12	Pass
5	0.190	1.992	9.5	0.193	2.987	6.47	Pass
6	0.007	0.496	1.5	0.009	0.745	1.15	Pass
7	0.060	1.340	4.5	0.065	2.010	3.24	Pass
8	0.005	0.372	1.4	0.007	0.558	1.20	Pass
9	0.131	N/A	N/A	0.141	N/A	N/A	N/A
10	0.004	0.298	1.2	0.005	0.447	1.11	Pass
11	0.049	0.577	8.6	0.054	0.866	6.24	Pass
12	0.004	0.248	1.6	0.006	0.372	1.54	Pass
13	0.062	0.372	16.8	0.068	0.558	12.25	Pass
14	0.004	N/A	N/A	0.006	N/A	N/A	N/A
15	0.050	N/A	N/A	0.053	N/A	N/A	N/A
16	0.004	N/A	N/A	0.007	N/A	N/A	N/A
17	0.045	N/A	N/A	0.049	N/A	N/A	N/A
18	0.004	N/A	N/A	0.005	N/A	N/A	N/A
19	0.044	N/A	N/A	0.048	N/A	N/A	N/A
20	0.004	N/A	N/A	0.005	N/A	N/A	N/A
21	0.038	N/A	N/A	0.042	N/A	N/A	N/A
22	0.004	N/A	N/A	0.006	N/A	N/A	N/A
23	0.036	N/A	N/A	0.041	N/A	N/A	N/A
24	0.004	N/A	N/A	0.006	N/A	N/A	N/A
25	0.037	N/A	N/A	0.043	N/A	N/A	N/A
26	0.004	N/A	N/A	0.009	N/A	N/A	N/A
27	0.037	N/A	N/A	0.043	N/A	N/A	N/A
28	0.004	N/A	N/A	0.006	N/A	N/A	N/A
29	0.041	N/A	N/A	0.046	N/A	N/A	N/A
30	0.004	N/A	N/A	0.006	N/A	N/A	N/A
31	0.043	N/A	N/A	0.047	N/A	N/A	N/A
32	0.004	N/A	N/A	0.007	N/A	N/A	N/A
33	0.045	N/A	N/A	0.049	N/A	N/A	N/A
34	0.004	N/A	N/A	0.006	N/A	N/A	N/A
35	0.045	N/A	N/A	0.047	N/A	N/A	N/A
36	0.003	N/A	N/A	0.005	N/A	N/A	N/A
37	0.043	N/A	N/A	0.047	N/A	N/A	N/A
38	0.004	N/A	N/A	0.005	N/A	N/A	N/A
39	0.041	N/A	N/A	0.043	N/A	N/A	N/A
40	0.009	N/A	N/A	0.014	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase C-Run time)

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:30:04** **End time: PM 01:32:56**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: FULL LOAD
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

Voltage (Vrms):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**35.707**	**I_RMS (Amps):**	**23.775**
I_1-Ref (Amps):	**18.785**	**Crest Factor:**	**1.656**
Power (Watts):	**5430**	**Power Factor:**	**0.997**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.272	0.918	29.62	OK
3	0.159	2.868	5.53	OK
4	0.032	0.918	3.47	OK
5	0.135	3.441	3.93	OK
6	0.008	0.918	0.92	OK
7	0.118	2.868	4.13	OK
8	0.016	0.918	1.77	OK
9	0.196	1.376	14.22	OK
10	0.013	0.918	1.42	OK
11	0.143	1.606	8.89	OK
12	0.014	0.688	2.10	OK
13	0.136	1.376	9.92	OK
14	0.016	0.688	2.38	OK
15	0.123	0.688	17.94	OK
16	0.016	0.688	2.30	OK
17	0.110	0.688	16.00	OK
18	0.018	0.688	2.57	OK
19	0.101	0.688	14.71	OK
20	0.019	0.688	2.71	OK
21	0.085	0.688	12.31	OK
22	0.015	0.688	2.15	OK
23	0.074	0.688	10.77	OK
24	0.020	0.688	2.85	OK
25	0.095	0.688	13.77	OK
26	0.021	0.688	3.03	OK
27	0.118	0.688	17.08	OK
28	0.014	0.688	2.10	OK
29	0.116	0.688	16.78	OK
30	0.019	0.688	2.74	OK
31	0.113	0.688	16.45	OK
32	0.021	0.688	2.99	OK
33	0.127	0.688	18.43	OK
34	0.021	0.688	3.00	OK
35	0.117	0.688	17.02	OK
36	0.014	0.688	2.05	OK
37	0.124	0.688	18.03	OK
38	0.017	0.688	2.41	OK
39	0.113	0.688	16.42	OK
40	0.024	0.688	3.44	OK

5th Harmonic Phase Angle and Magnitude for Phase A :
H-5_min_phase : -16.1 Degree (Lagging) **H-5_max_phase : -28.9 Degree (Lagging)**
H-5_ave_phase : 157.6 Degree (Leading)

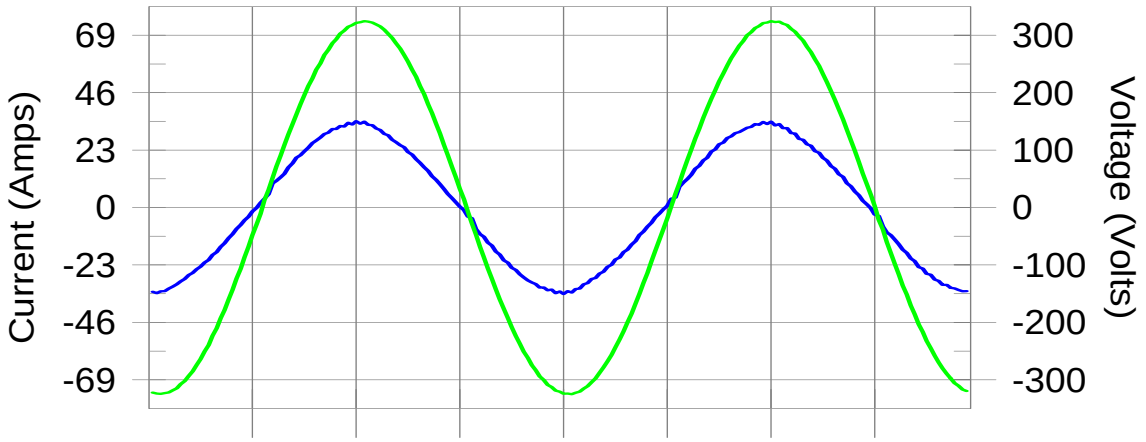
H-5_ave_vector_magnitude : 0.037 Amp **H-5_standard_ave_magnitude : 0.193 Amp**
H-5_standard_max_magnitude : 0.196 Amp

Harmonics – Per EN/IEC61000-3-12(Phase A-Run time)

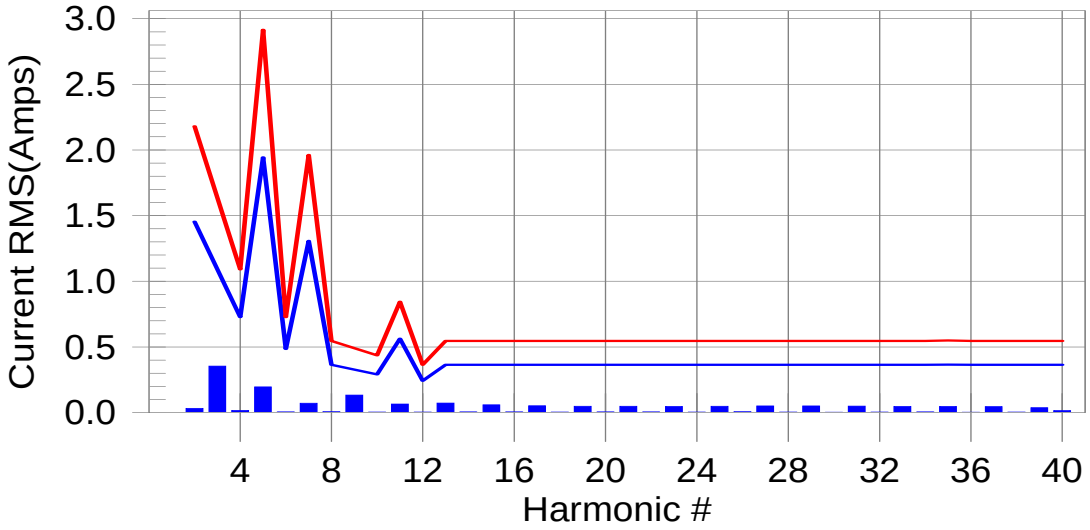
EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 18.64 % of the limit.**

Current Test Result Summary (Phase A-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.529 **Limit(%): 13.000** **PWHD(%): 4.603** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**40.031**	**I_RMS (Amps):**	**33.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.701**
Power (Watts):	**8463**	**Power Factor:**	**0.995**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.026	1.453	1.8	0.032	2.180	1.47	Pass
3	0.342	N/A	N/A	0.355	N/A	N/A	N/A
4	0.013	0.727	1.8	0.016	1.090	1.49	Pass
5	0.193	1.944	9.9	0.196	2.916	6.72	Pass
6	0.004	0.484	0.9	0.005	0.727	0.76	Pass
7	0.067	1.308	5.1	0.072	1.962	3.65	Pass
8	0.004	0.363	1.2	0.007	0.545	1.27	Pass
9	0.131	N/A	N/A	0.134	N/A	N/A	N/A
10	0.003	0.291	1.0	0.004	0.436	1.02	Pass
11	0.059	0.563	10.4	0.066	0.845	7.77	Pass
12	0.003	0.242	1.4	0.005	0.363	1.34	Pass
13	0.068	0.363	18.6	0.073	0.545	13.31	Pass
14	0.003	N/A	N/A	0.006	N/A	N/A	N/A
15	0.055	N/A	N/A	0.059	N/A	N/A	N/A
16	0.003	N/A	N/A	0.006	N/A	N/A	N/A
17	0.048	N/A	N/A	0.052	N/A	N/A	N/A
18	0.003	N/A	N/A	0.004	N/A	N/A	N/A
19	0.044	N/A	N/A	0.049	N/A	N/A	N/A
20	0.004	N/A	N/A	0.005	N/A	N/A	N/A
21	0.044	N/A	N/A	0.049	N/A	N/A	N/A
22	0.004	N/A	N/A	0.005	N/A	N/A	N/A
23	0.043	N/A	N/A	0.048	N/A	N/A	N/A
24	0.004	N/A	N/A	0.005	N/A	N/A	N/A
25	0.043	N/A	N/A	0.048	N/A	N/A	N/A
26	0.003	N/A	N/A	0.007	N/A	N/A	N/A
27	0.045	N/A	N/A	0.050	N/A	N/A	N/A
28	0.003	N/A	N/A	0.005	N/A	N/A	N/A
29	0.048	N/A	N/A	0.052	N/A	N/A	N/A
30	0.003	N/A	N/A	0.004	N/A	N/A	N/A
31	0.045	N/A	N/A	0.049	N/A	N/A	N/A
32	0.004	N/A	N/A	0.005	N/A	N/A	N/A
33	0.043	N/A	N/A	0.047	N/A	N/A	N/A
34	0.003	N/A	N/A	0.005	N/A	N/A	N/A
35	0.045	N/A	N/A	0.048	N/A	N/A	N/A
36	0.003	N/A	N/A	0.004	N/A	N/A	N/A
37	0.044	N/A	N/A	0.046	N/A	N/A	N/A
38	0.003	N/A	N/A	0.005	N/A	N/A	N/A
39	0.036	N/A	N/A	0.037	N/A	N/A	N/A
40	0.010	N/A	N/A	0.015	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase A-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**40.031**	**I_RMS (Amps):**	**33.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.701**
Power (Watts):	**8463**	**Power Factor:**	**0.995**

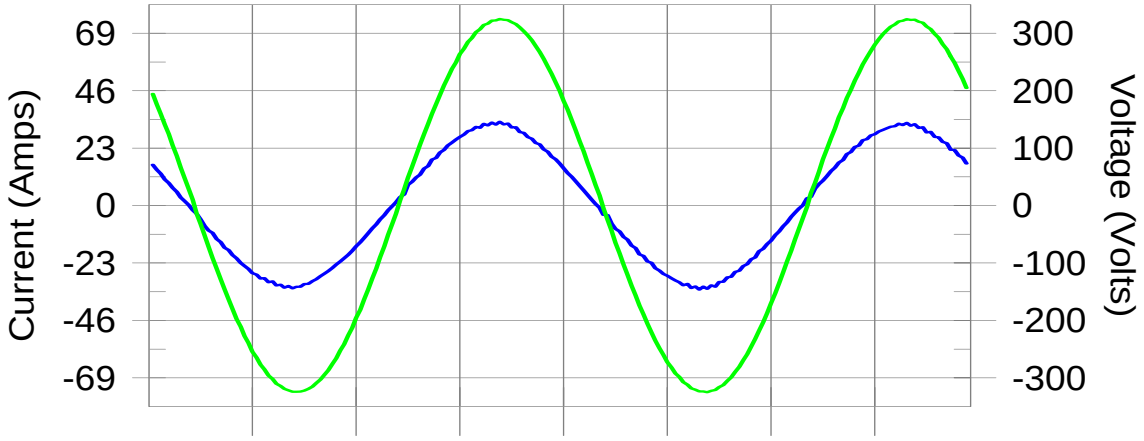
Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.316	0.918	34.45	OK
3	0.164	2.868	5.72	OK
4	0.027	0.918	2.95	OK
5	0.120	3.440	3.49	OK
6	0.007	0.918	0.74	OK
7	0.118	2.868	4.10	OK
8	0.013	0.918	1.38	OK
9	0.184	1.376	13.39	OK
10	0.011	0.918	1.22	OK
11	0.118	1.605	7.37	OK
12	0.013	0.688	1.83	OK
13	0.126	1.376	9.13	OK
14	0.012	0.688	1.78	OK
15	0.107	0.688	15.62	OK
16	0.014	0.688	1.98	OK
17	0.088	0.688	12.82	OK
18	0.017	0.688	2.45	OK
19	0.073	0.688	10.60	OK
20	0.023	0.688	3.33	OK
21	0.076	0.688	11.09	OK
22	0.014	0.688	1.99	OK
23	0.085	0.688	12.36	OK
24	0.015	0.688	2.17	OK
25	0.098	0.688	14.19	OK
26	0.015	0.688	2.16	OK
27	0.116	0.688	16.79	OK
28	0.013	0.688	1.90	OK
29	0.118	0.688	17.14	OK
30	0.015	0.688	2.20	OK
31	0.108	0.688	15.66	OK
32	0.017	0.688	2.46	OK
33	0.117	0.688	17.01	OK
34	0.015	0.688	2.19	OK
35	0.114	0.688	16.57	OK
36	0.016	0.688	2.27	OK
37	0.114	0.688	16.60	OK
38	0.017	0.688	2.43	OK
39	0.099	0.688	14.34	OK
40	0.024	0.688	3.43	OK

Harmonics – Per EN/IEC61000-3-12(Phase B-Run time)

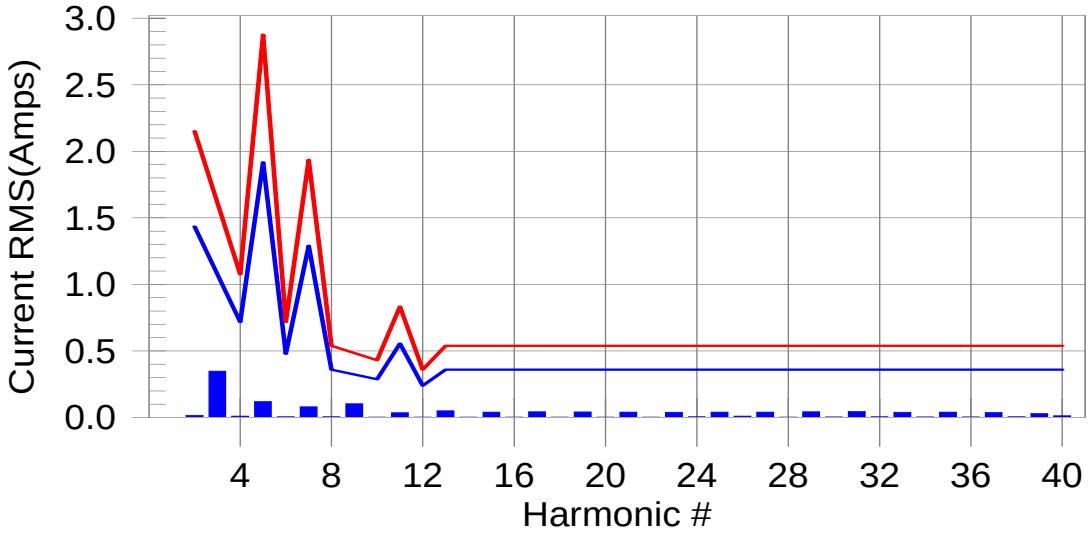
EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 12.60 % of the limit.**

Current Test Result Summary (Phase B-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.267 **Limit(%): 13.000** **PWHD(%): 3.866** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**41.031**	**I_RMS (Amps):**	**34.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.672**
Power (Watts):	**8463**	**Power Factor:**	**0.995**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.011	1.434	0.8	0.016	2.151	0.73	Pass
3	0.342	N/A	N/A	0.348	N/A	N/A	N/A
4	0.009	0.717	1.2	0.011	1.076	1.02	Pass
5	0.117	1.918	6.1	0.120	2.878	4.17	Pass
6	0.004	0.478	0.9	0.006	0.717	0.78	Pass
7	0.078	1.291	6.0	0.081	1.936	4.16	Pass
8	0.004	0.359	1.1	0.006	0.538	1.03	Pass
9	0.131	N/A	N/A	0.103	N/A	N/A	N/A
10	0.003	0.287	0.9	0.004	0.430	0.82	Pass
11	0.031	0.556	5.5	0.036	0.834	4.26	Pass
12	0.002	0.239	0.9	0.003	0.359	0.96	Pass
13	0.045	0.359	12.6	0.050	0.538	9.30	Pass
14	0.003	N/A	N/A	0.004	N/A	N/A	N/A
15	0.036	N/A	N/A	0.040	N/A	N/A	N/A
16	0.003	N/A	N/A	0.004	N/A	N/A	N/A
17	0.037	N/A	N/A	0.043	N/A	N/A	N/A
18	0.003	N/A	N/A	0.004	N/A	N/A	N/A
19	0.037	N/A	N/A	0.042	N/A	N/A	N/A
20	0.003	N/A	N/A	0.003	N/A	N/A	N/A
21	0.035	N/A	N/A	0.041	N/A	N/A	N/A
22	0.002	N/A	N/A	0.003	N/A	N/A	N/A
23	0.035	N/A	N/A	0.039	N/A	N/A	N/A
24	0.004	N/A	N/A	0.005	N/A	N/A	N/A
25	0.037	N/A	N/A	0.041	N/A	N/A	N/A
26	0.004	N/A	N/A	0.010	N/A	N/A	N/A
27	0.038	N/A	N/A	0.041	N/A	N/A	N/A
28	0.003	N/A	N/A	0.004	N/A	N/A	N/A
29	0.039	N/A	N/A	0.043	N/A	N/A	N/A
30	0.003	N/A	N/A	0.005	N/A	N/A	N/A
31	0.042	N/A	N/A	0.045	N/A	N/A	N/A
32	0.004	N/A	N/A	0.006	N/A	N/A	N/A
33	0.037	N/A	N/A	0.039	N/A	N/A	N/A
34	0.004	N/A	N/A	0.005	N/A	N/A	N/A
35	0.040	N/A	N/A	0.042	N/A	N/A	N/A
36	0.003	N/A	N/A	0.005	N/A	N/A	N/A
37	0.036	N/A	N/A	0.038	N/A	N/A	N/A
38	0.004	N/A	N/A	0.006	N/A	N/A	N/A
39	0.028	N/A	N/A	0.029	N/A	N/A	N/A
40	0.008	N/A	N/A	0.012	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase B-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**41.031**	**I_RMS (Amps):**	**34.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.672**
Power (Watts):	**8463**	**Power Factor:**	**0.995**

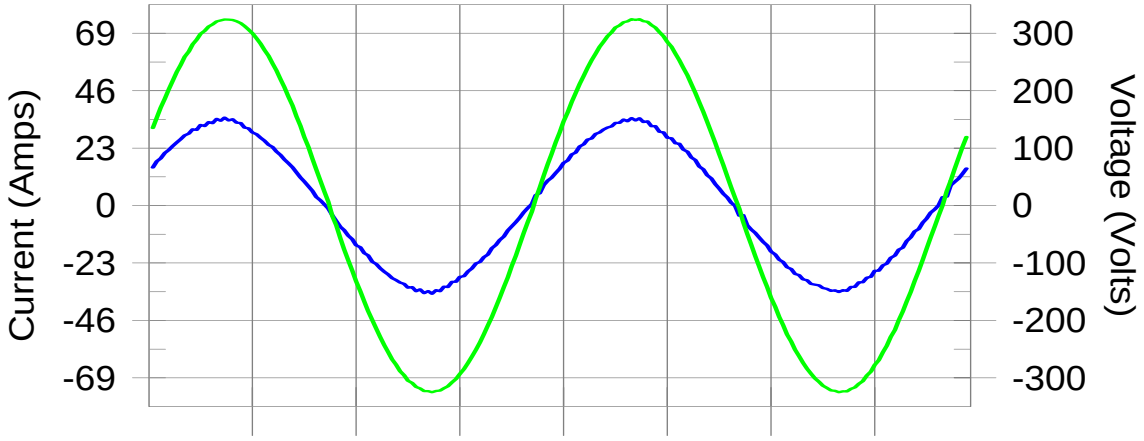
Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.306	0.918	33.36	OK
3	0.155	2.869	5.39	OK
4	0.027	0.918	2.92	OK
5	0.123	3.443	3.58	OK
6	0.013	0.918	1.46	OK
7	0.121	2.869	4.22	OK
8	0.018	0.918	1.93	OK
9	0.167	1.376	12.11	OK
10	0.010	0.918	1.12	OK
11	0.125	1.607	7.77	OK
12	0.015	0.688	2.21	OK
13	0.119	1.376	8.68	OK
14	0.016	0.688	2.33	OK
15	0.107	0.688	15.60	OK
16	0.018	0.689	2.56	OK
17	0.090	0.688	13.01	OK
18	0.015	0.688	2.11	OK
19	0.079	0.688	11.44	OK
20	0.012	0.688	1.79	OK
21	0.079	0.688	11.54	OK
22	0.013	0.689	1.83	OK
23	0.089	0.689	12.96	OK
24	0.019	0.689	2.72	OK
25	0.098	0.689	14.27	OK
26	0.017	0.688	2.43	OK
27	0.108	0.689	15.74	OK
28	0.014	0.688	2.02	OK
29	0.106	0.688	15.37	OK
30	0.017	0.688	2.41	OK
31	0.112	0.688	16.24	OK
32	0.020	0.688	2.85	OK
33	0.120	0.688	17.46	OK
34	0.017	0.688	2.50	OK
35	0.112	0.688	16.33	OK
36	0.014	0.689	2.09	OK
37	0.103	0.688	14.92	OK
38	0.015	0.689	2.21	OK
39	0.091	0.688	13.17	OK
40	0.019	0.689	2.76	OK

Harmonics – Per EN/IEC61000-3-12(Phase C-Run time)

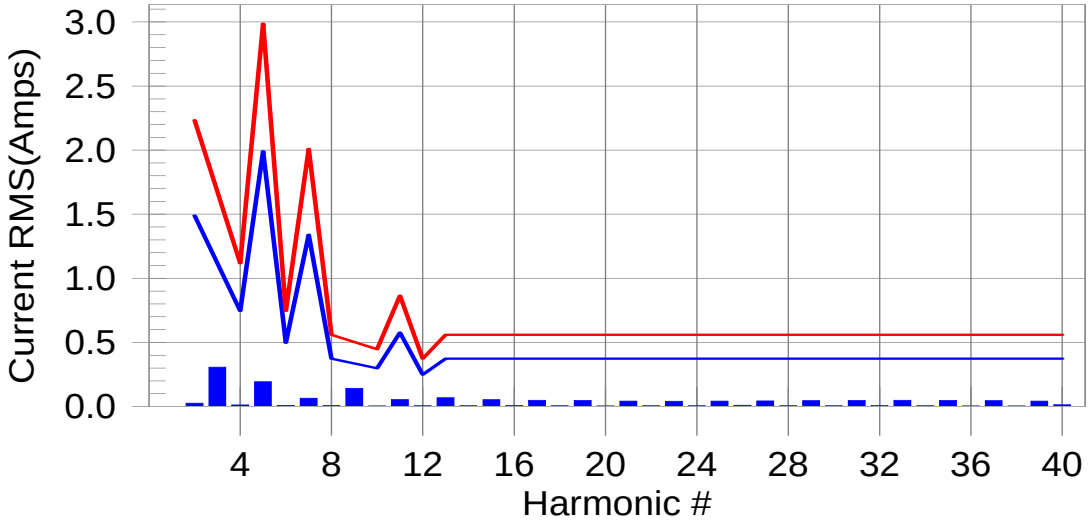
EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class 2 limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 17.28 % of the limit.**

Current Test Result Summary (Phase C-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
I-THD(%): 2.254 **Limit(%): 13.000** **PWHD(%): 4.258** **PWHD Limit(%): 22.000**

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**40.031**	**I_RMS (Amps):**	**32.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.656**
Power (Watts):	**8420**	**Power Factor:**	**0.995**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.021	1.489	1.4	0.026	2.234	1.18	Pass
3	0.342	N/A	N/A	0.307	N/A	N/A	N/A
4	0.010	0.745	1.3	0.012	1.117	1.12	Pass
5	0.190	1.992	9.5	0.193	2.987	6.47	Pass
6	0.007	0.496	1.5	0.009	0.745	1.15	Pass
7	0.060	1.340	4.5	0.065	2.010	3.24	Pass
8	0.005	0.372	1.4	0.007	0.558	1.20	Pass
9	0.131	N/A	N/A	0.141	N/A	N/A	N/A
10	0.004	0.298	1.2	0.005	0.447	1.11	Pass
11	0.049	0.577	8.6	0.054	0.866	6.24	Pass
12	0.004	0.248	1.6	0.006	0.372	1.54	Pass
13	0.062	0.372	16.8	0.068	0.558	12.25	Pass
14	0.004	N/A	N/A	0.006	N/A	N/A	N/A
15	0.050	N/A	N/A	0.053	N/A	N/A	N/A
16	0.004	N/A	N/A	0.007	N/A	N/A	N/A
17	0.045	N/A	N/A	0.049	N/A	N/A	N/A
18	0.004	N/A	N/A	0.005	N/A	N/A	N/A
19	0.044	N/A	N/A	0.048	N/A	N/A	N/A
20	0.004	N/A	N/A	0.005	N/A	N/A	N/A
21	0.038	N/A	N/A	0.042	N/A	N/A	N/A
22	0.004	N/A	N/A	0.006	N/A	N/A	N/A
23	0.036	N/A	N/A	0.041	N/A	N/A	N/A
24	0.004	N/A	N/A	0.006	N/A	N/A	N/A
25	0.037	N/A	N/A	0.043	N/A	N/A	N/A
26	0.004	N/A	N/A	0.009	N/A	N/A	N/A
27	0.037	N/A	N/A	0.043	N/A	N/A	N/A
28	0.004	N/A	N/A	0.006	N/A	N/A	N/A
29	0.041	N/A	N/A	0.046	N/A	N/A	N/A
30	0.004	N/A	N/A	0.006	N/A	N/A	N/A
31	0.043	N/A	N/A	0.047	N/A	N/A	N/A
32	0.004	N/A	N/A	0.007	N/A	N/A	N/A
33	0.045	N/A	N/A	0.049	N/A	N/A	N/A
34	0.004	N/A	N/A	0.006	N/A	N/A	N/A
35	0.045	N/A	N/A	0.047	N/A	N/A	N/A
36	0.003	N/A	N/A	0.005	N/A	N/A	N/A
37	0.043	N/A	N/A	0.047	N/A	N/A	N/A
38	0.004	N/A	N/A	0.005	N/A	N/A	N/A
39	0.041	N/A	N/A	0.043	N/A	N/A	N/A
40	0.009	N/A	N/A	0.014	N/A	N/A	N/A

Note: Measured reference fundamental current limits were applied for this test.

Voltage Source Verification Data (Phase C-Run time)

EUT: Uninterruptible power systems **Tested by: KY**
Test category: Stage:2 1ph & B3ph(Rsce=33) **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:30:04 PM** **End time: 01:32:56 PM**
Test duration (min): 2.5 **Data file name: WIN2106_H-000010.cts_data**
Comment: Line Mode
Customer: KSTAR

Test Result: Pass **Source qualification: Normal**
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12(2004:11) & IEC/EN61000-4-7

Highest parameter values during test:

V_RMS (Volts):	**229.50**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**40.031**	**I_RMS (Amps):**	**32.382**
I_1-Ref (Amps):	**31.354**	**Crest Factor:**	**1.656**
Power (Watts):	**8420**	**Power Factor:**	**0.995**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.272	0.918	29.62	OK
3	0.159	2.868	5.53	OK
4	0.032	0.918	3.47	OK
5	0.135	3.441	3.93	OK
6	0.008	0.918	0.92	OK
7	0.118	2.868	4.13	OK
8	0.016	0.918	1.77	OK
9	0.196	1.376	14.22	OK
10	0.013	0.918	1.42	OK
11	0.143	1.606	8.89	OK
12	0.014	0.688	2.10	OK
13	0.136	1.376	9.92	OK
14	0.016	0.688	2.38	OK
15	0.123	0.688	17.94	OK
16	0.016	0.688	2.30	OK
17	0.110	0.688	16.00	OK
18	0.018	0.688	2.57	OK
19	0.101	0.688	14.71	OK
20	0.019	0.688	2.71	OK
21	0.085	0.688	12.31	OK
22	0.015	0.688	2.15	OK
23	0.074	0.688	10.77	OK
24	0.020	0.688	2.85	OK
25	0.095	0.688	13.77	OK
26	0.021	0.688	3.03	OK
27	0.118	0.688	17.08	OK
28	0.014	0.688	2.10	OK
29	0.116	0.688	16.78	OK
30	0.019	0.688	2.74	OK
31	0.113	0.688	16.45	OK
32	0.021	0.688	2.99	OK
33	0.127	0.688	18.43	OK
34	0.021	0.688	3.00	OK
35	0.117	0.688	17.02	OK
36	0.014	0.688	2.05	OK
37	0.124	0.688	18.03	OK
38	0.017	0.688	2.41	OK
39	0.113	0.688	16.42	OK
40	0.024	0.688	3.44	OK

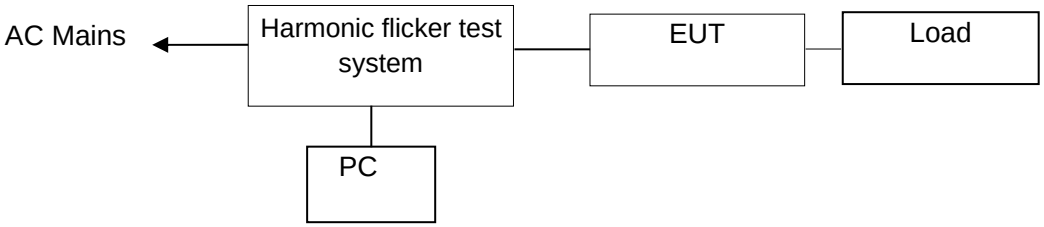
5th Harmonic Phase Angle and Magnitude for Phase A :

H-5_min_phase : -16.1 Degree (Lagging)
H-5_max_phase : -28.9 Degree (Lagging)
H-5_ave_phase : 157.6 Degree (Leading)

H-5_ave_vector_magnitude : 0.037 Amp
H-5_standard_ave_magnitude : 0.193 Amp
H-5_standard_max_magnitude : 0.196 Amp

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



(EUT: Uninterruptible power systems)

7.2. Measuring Standard

EN 61000-3-11: 2000

7.3. Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 7.1.

7.4. Measuring Results

PASS.

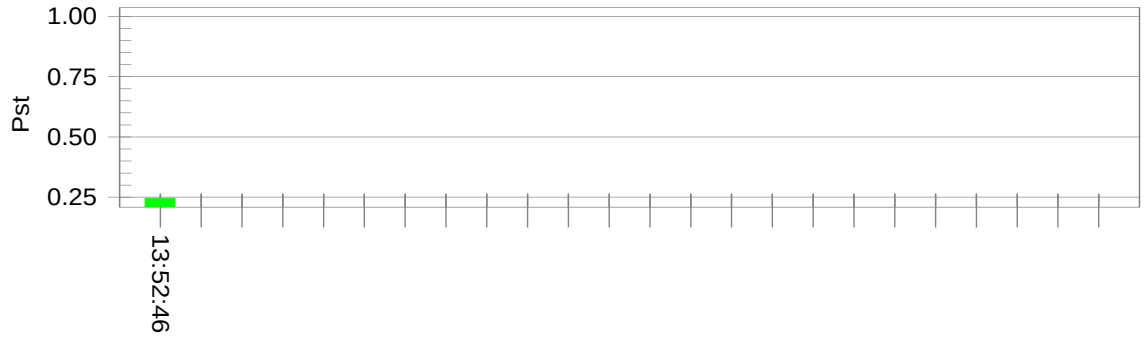
Please see the attached page.

Flicker Test Summary (Phase A-Run time) per EN/IEC61000-3-11

EUT: UPS(YDC3320H) **Tested by: YU**
Test category: All parameters **Test Margin: 100**
Test date: 2014-1-14 **Start time: PM 01:42:24** **End time: PM 01:52:47**
Test duration (min): 10 **Data file name: WIN2106_F-000011.cts_data**
Comment: FULL LOAD
Customer: KSTAR
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt): 227.74

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**1.65**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**1.39**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.246**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.107**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 1.854
Calculated dc(%): 2.203
Calculated Pst : 0.328
Calculated Plt : 0.143

The maximum permissible system impedance Zsys :

Z-phase A = 0.518 Ohm + j 0.324 Ohm	**(0.518 Ohm + 1030 H)**
Z-neutral A = 0.345 Ohm + j 0.216 Ohm	**(0.345 Ohm + 687 H)**

Flicker Test Summary (Phase A-Run time) per EN/IEC61000-3-11

EUT: Uninterruptible power systems **Tested by: KY**
Test category: All parameters **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:42:24 PM** **End time: 01:52:47 PM**
Test duration (min): 10 **Data file name: WIN2106_F-000011.cts_data**
Comment: Lind Mode
Customer: KSTAR
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line

Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt): 227.74

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**1.65**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**1.39**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.246**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.107**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 1.854
Calculated dc(%): 2.203

Calculated Pst : 0.328
Calculated Plt : 0.143

The maximum permissible system impedance Zsys :

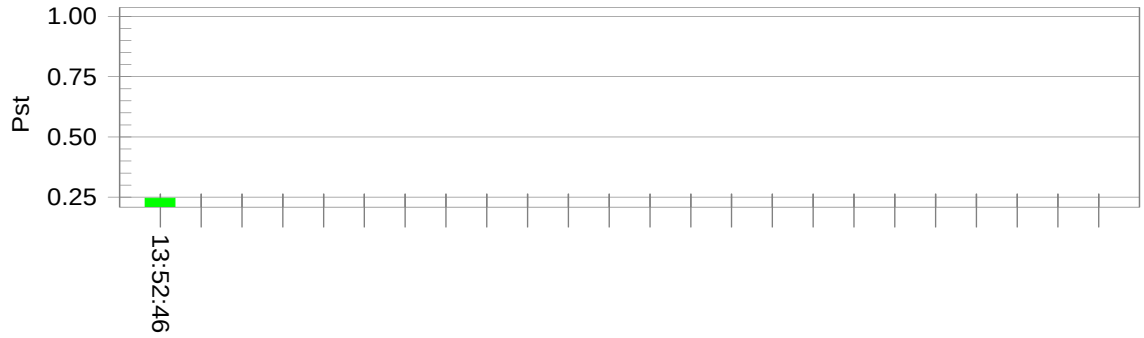
Z-phase A = 0.518 Ohm + j 0.324 Ohm (0.518 Ohm + 1030 H)
Z-neutral A = 0.345 Ohm + j 0.216 Ohm (0.345 Ohm + 687 H)

Flicker Test Summary (Phase B-Run time) per EN/IEC61000-3-11

EUT: Uninterruptible power systems **Tested by: KY**
Test category: All parameters **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:42:24 PM** **End time: 01:52:47 PM**
Test duration (min): 10 **Data file name: WIN2106_F-000011.cts_data**
Comment: Lind Mode
Customer: KSTAR
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt): 227.71

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.74**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.89**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.246**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.107**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): -1.189
Calculated dc(%): 0.986

Calculated Pst : 0.328
Calculated Plt : 0.143

The maximum permissible system impedance Zsys :

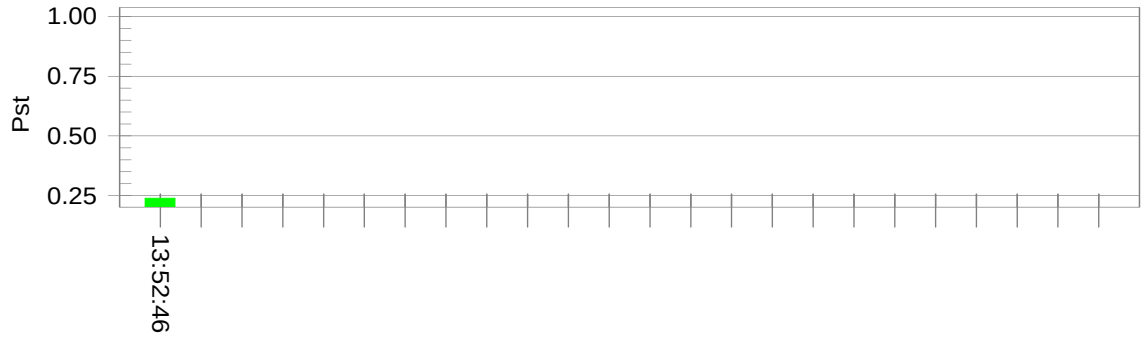
Z-phase B = 1.277 Ohm + j 0.798 Ohm (1.277 Ohm + 2540 H)
Z-neutral B = 0.851 Ohm + j 0.532 Ohm (0.851 Ohm + 1694 H)

Flicker Test Summary (Phase C-Run time) per EN/IEC61000-3-11

EUT: Uninterruptible power systems **Tested by: KY**
Test category: All parameters **Test Margin: 100**
Test date: 2014-9-5 **Start time: 01:42:24 PM** **End time: 01:52:47 PM**
Test duration (min): 10 **Data file name: WIN2106_F-000011.cts_data**
Comment: Lind Mode
Customer: KSTAR
Z-test Phase = (0.150 + j 0.150 Ohm) Neutral = (0.100 + j 0.100 Ohm)

Test Result: Pass
Status: Test Completed

Pst_i and limit line



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt): 227.70

Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.99**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.85**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.239**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.105**	**Test limit:**	**0.650**	**Pass**

Calculated dmax(%): 1.137
Calculated dc(%): 1.319
Calculated Pst : 0.319

Calculated Plt : 0.140

The maximum permissible system impedance Zsys :

Z-phase C = 1.329 Ohm + j 0.831 Ohm (1.329 Ohm + 2644 H)
Z-neutral C = 0.886 Ohm + j 0.554 Ohm (0.886 Ohm + 1763 H)

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:
1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor and purchaser.
The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.
Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer’s instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

Criterion D

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data.

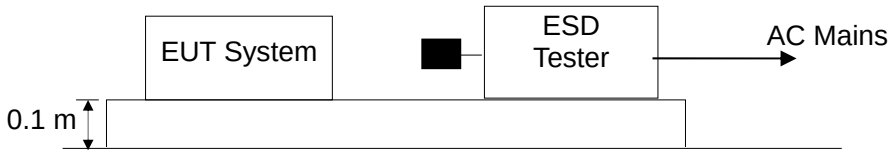
9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Block Diagram of Test Setup

9.1.1. Block diagram of connection between the EUT and simulators

(EUT: Uninterruptible power systems)

9.1.2. Block diagram of ESD test setup



(EUT: Uninterruptible power systems)

9.2. Test Standard

IEC 61000-4-2:2008 (Air Discharge: ±8kV, Contact Discharge: ±4kV)

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Uninterruptible power systems

Model Number : YDC3310S, YDC3310H, YDC3315S, YDC3315H, YDC3320S, YDC3320H, YDC3340H, YDC3330S, YDC3330H
(Note: These models are identical in circuitry and electrical, mechanical and physical construction; the only differences are the power and model number. for trading purpose. We prepare YDC3320S/H, YDC3340H for test.)

Battery bank : YDC-BT battery bank series

Power supply : MODEL: YDC3310S
CAPACITY: 10kVA/9kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 20A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 20A Max, 50/60Hz
BATT INPUT: ±120Vdc, 44A
Icc: 6kA

MODEL: YDC3310H
CAPACITY: 10kVA/9kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 20A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 20A Max, 50/60Hz
BATT INPUT: ±96/108/120Vdc, 55/49/44A
Icc: 6kA

MODEL: YDC3315S
CAPACITY: 15kVA/13.5kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 32A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 32A Max, 50/60Hz
BATT INPUT: ±120Vdc, 66A
Icc: 6kA

MODEL: YDC3315H
CAPACITY: 15kVA/13.5kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 32A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 32A Max, 50/60Hz
BATT INPUT: ±96/108/120Vdc, 83/74/66A
Icc: 6kA

MODEL: YDC3320S
CAPACITY: 20kVA/18kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 40A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 40A Max, 50/60Hz
BATT INPUT: ±120Vdc, 88A
Icc: 6kA

MODEL: YDC3320H
CAPACITY: 20kVA/18kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 40A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 40A Max, 50/60Hz
BATT INPUT: ±96/108/120Vdc, 110/98/88A
Icc: 6kA

MODEL: YDC3330S
CAPACITY: 30kVA/27kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 63A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 63A Max, 50/60Hz
BATT INPUT: ±120Vdc, 143A
Icc: 6kA

MODEL: YDC3330H
CAPACITY: 30kVA/27kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 63A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 63A Max, 50/60Hz
BATT INPUT: ±96/108/120Vdc；139/141/143A
Icc: 6kA

MODEL: YDC3340H
CAPACITY: 40kVA/36kW
OUTPUT: 380/400/415Vac, 3Φ+N+PE, 100A Max, 50/60Hz
AC INPUT: 380/400/415Vac, 3Φ+N+PE, 80A Max, 50/60Hz
BATT INPUT: ±192/204/216/228/240Vdc, 119/112/106/100/95A
Icc: 6kA

Test voltage	:	AC 380V/50Hz
Applicant	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.
Address	:	4/F, No.1 Bldg, Software Park, Keji C. Rd. 2nd, Hi-Tech Industrial Zone, Shenzhen 518057, P.R.China
Manufacturer	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.
Address	:	4/F, No.1 Bldg, Software Park, Keji C. Rd. 2nd, Hi-Tech Industrial Zone, Shenzhen 518057, P.R.China
Factory	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD. GUANGMING BRANCH
Address	:	Kstar High Tech Park, Guangming High Technology Town, Gongming Street, Baoan District, Shenzhen City, Guangdong Province, P.R. China Shenzhen City, Guangdong Province, P.R. China
Date of receiver	:	January 09, 2014
Date of Test	:	January 09, 2014 to January 21, 2014

2.2. Description of Support Device

N/A

2.3. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2013.10.29
The certificate is valid until 2016.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01: 2006 (identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Guangzhou 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, April 17, 2013
The Certificate Registration Number. is 709623.

Accredited by Industry Canada, November 15, 2010
The Certificate Registration Number. is 46405-4480

Name of Firm : SHENZHEN EMTEK CO., LTD
Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzen, Guangdong, China

2.4. Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	3.16dB(9k~150kHz Conduction 2#) 2.90dB(150k-30MHz Conduction 2#)
Radiated Emission Uncertainty (10m Chamber)	:	3.96dB (30M~1GHz Polarize: H) 4.04dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	:	0.07%
Uncertainty for Harmonic test	:	1.8%
Uncertainty for C/S Test	:	1.45(Using CDN Test)
Uncertainty for R/S Test	:	2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	:	0.6℃ 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	May 29, 2013	1 Year
☑	L.I.S.N.	Schwarzbeck	NNLK8129	8129-203	May 29, 2013	1 Year
☐	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z6	100011	May 29, 2013	1 Year
☐	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z6	100253	May 29, 2013	1 Year
☐	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z5	100191	May 29, 2013	1 Year
☑	50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
☑	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 29, 2013	1 Year
☐	Current probe	Rohde & Schwarz	EZ-17	0816.2063.02	May 29, 2013	1 Year

3.2. For Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	EMI TEST RECEIVER	R&S/DE	ESR3	1316.300K03-101707-Z1	Dec.14, 2013	1Year
☑	EMI TEST RECEIVER	R&S/DE	ESCI3	1166.5950K03-101384-Bw	Dec.14, 2013	1Year
☑	Frequency Analyser	R&S/DE	FSV40	132.1.3008K39-100967-AP	Dec.14, 2013	1Year
☑	Broadband Antenna (30M-3GHz)	Schwarzbeck/DE	VULP9163	659/660/661	Dec.14, 2013	1Year
☐	Horn Antenna (1G-18GHz)	Schwarzbeck/DE	BBHA9120D	1177/1178	Dec.14, 2013	1Year
☐	Horn Antenna (15G-26.5GHz)	Schwarzbeck/DE	BBHA9170	547	Dec.14, 2013	1Year
☐	Horn Antenna (26.5G-40GHz)	AHS/USA	SAS-573	184/185	Dec.14, 2013	1Year
☑	Pre-Amplifier (10M-1GHz 40dB)	Lunar EM	PM01-1-40	N/A	Dec.14, 2013	1Year
☐	Pre-Amplifier (1G-18GHz 40dB)	Lunar EM	PM1-18-40	J101121229001	Dec.14, 2013	1Year
☐	Pre-Amplifier (1G-18GHz 48dB)	Lunar EM	PM1-18-48	DS131115120D1177	Dec.14, 2013	1Year
☐	Pre-Amplifier(18G-26.5GHz 40dB)	Lunar EM	PM18-26-40	J1012131010001	Dec.14, 2013	1Year
☐	Pre-Amplifier (18G-26.5GHz 48dB)	Lunar EM	PM18-26-48	J1013131010001	Dec.14, 2013	1Year
☐	Pre-Amplifier(26.5G-40GHz 40dB)	Lunar EM	PM26-40-40	J1013131028001	Dec.14, 2013	1Year

3.3. For Harmonic Current / Flicker Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	45KVA AC Power source	Teseq/Germany	NSG 1007-45/45KVA	1305A02873	April 25, 2013	1 Year
☑	Signal conditioning Unit	Teseq/Germany	CCN 1000-3	1305A02873	April 25, 2013	1 Year
☑	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	April 25, 2013	1 Year
☑	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	April 25, 2013	1 Year
☐	Profline 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	April 25, 2013	1 Year

3.4. For Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	ESD Tester	TESEQ AG	NSG 438A	130	May 29, 2013	1 Year
☑	Impulse Module	TESEQ AG	INA 4380-150pF/330Ohm	403-550/1712	May 29, 2013	1 Year

3.5. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Signal Generator	Agilent	N5181A	MY50145187	Nov 04, 2013	1 Year
☑	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 29, 2013	1 Year
☑	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/34238	May 29, 2013	1 Year
☑	Field Strength Meter	DARE	RSS1006A	10I00037SO22	Nov 04, 2013	1 Year
☑	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	Nov 04, 2013	1 Year
☑	Power Amplifier	MILMEGA	80RF1000-175	1059345	May 29, 2013	1 Year
☐	Power Amplifier	MILMEGA	AS0102-55	1018770	May 29, 2013	1 Year
☐	Power Amplifier	MILMEGA	AS1860-50	1059346	Nov 04, 2013	1 Year
☑	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	N/A	May 11, 2013	1 Year
☐	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	Nov 04, 2013	1 Year
☑	Multi-function interface system	DARE	CTR1009B	12I00250SNO72	N/A	N/A
☑	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A

3.6. For Electrical Fast Transient/Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Burst Tester	HAEFELY	PEFT4010	080981-16	May 29, 2013	1Year
☐	Coupling Clamp	HAEFELY	IP-4A	147147	May 29, 2013	1Year
☑	Three phase CDN	Teseq	CDN 163	202	May 29, 2013	1 Year

3.7. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Surge Controller	HAEFELY	Psurge 8000	174031	May 29, 2013	1Year
☑	Impulse Module	HAEFELY	PIM 100	174124	May 29, 2013	1Year
☑	Coupling Decoupling Filter	HAEFELY	PCD 130	172181	May 29, 2013	1Year

3.8. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Simulator	EMTEST	CWS500C	0900-12	May 29, 2013	1Year
☐	CDN	EMTEST	CDN-M2	5100100100	May 29, 2013	1Year
☑	CDN	EMTEST	CDN-M3	0900-11	May 29, 2013	1Year
☐	Injection Clamp	EMTEST	F-2031-23MM	368	May 29, 2013	1Year
☑	Attenuator	EMTEST	ATT6	0010222A	May 29, 2013	1Year
☑	Three phase CDN	Teseq	CDN M332S	32655	May 29, 2013	1 Year
☐	Three phase CDN	Teseq	CDN M432S	33670	May 29, 2013	1 Year
☑	Three phase CDN	Teseq	CDN M432-3LNS	34048	May 29, 2013	1 Year
☐	Three phase CDN	Teseq	CDN M532S	33799	May 29, 2013	1 Year

3.9. For Magnetic Field Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 29, 2013	1Year

3.10. For Voltage Dips and Interruptions Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	45KVA AC Power source	Teseq/Germany	NSG 1007-45/45KVA	1305A02873	April 25, 2013	1 Year
☐	Signal conditioning Unit	Teseq/Germany	CCN 1000-3	1305A02873	April 25, 2013	1 Year
☐	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	April 25, 2013	1 Year
☐	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	April 25, 2013	1 Year
☑	Profline 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	April 25, 2013	1 Year

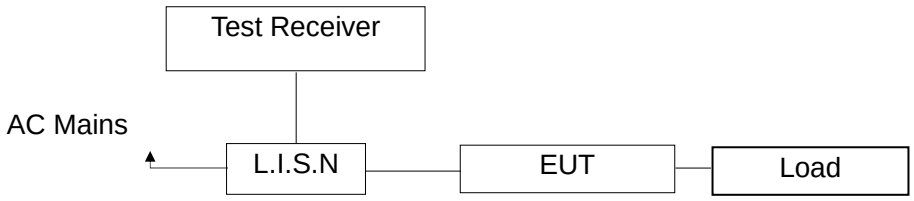
3.11. Low Frequency Signals Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Programmable AC Source	CHROMA	6530	/	May 29, 2013	1Year

4. CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup

For AC Mains：



(EUT: Uninterruptible power systems)

4.2. Measuring Standard

EN62040-2: 2006, IEC 62040-2:2005 Category C2
Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66
0.50 ~ 30.00	73	60
NOTE1- The lower limit shall apply at the transition frequencies.		

4.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 62040-2 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

Uninterruptible power systems (EUT)
Model Number : YDC3320S/H
Serial Number : N/A

4.4. Operating Condition of EUT

4.4.1.Setup the EUT as shown on Section 4.1.

4.4.2.Turn on the power of all equipments.

4.4.3.Let the EUT work in measuring mode (Line mode/ Battery mode) and measure it.

4.5. Test Procedure

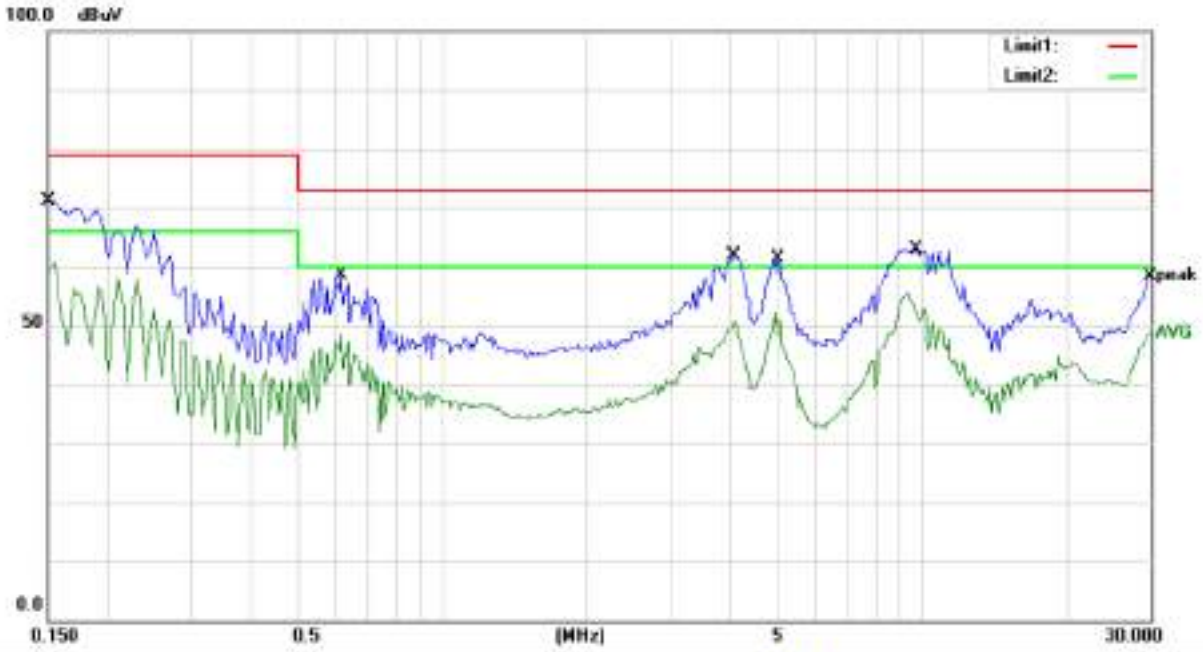
The EUT is put on the plane 0.1m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N) or connected to the telecommunication port through an impedance stabilization network (ISN). L.I.S.N provided a 50ohm coupling impedance for the tested equipments AC mains port, I.S.N provided a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test. Both sides of AC line and telecommunication line are investigated to find out the maximum conducted emission according to the EN 62040-2 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.
The frequency range from 150kHz to 30MHz is investigated.

4.6. Measuring Results

PASS.

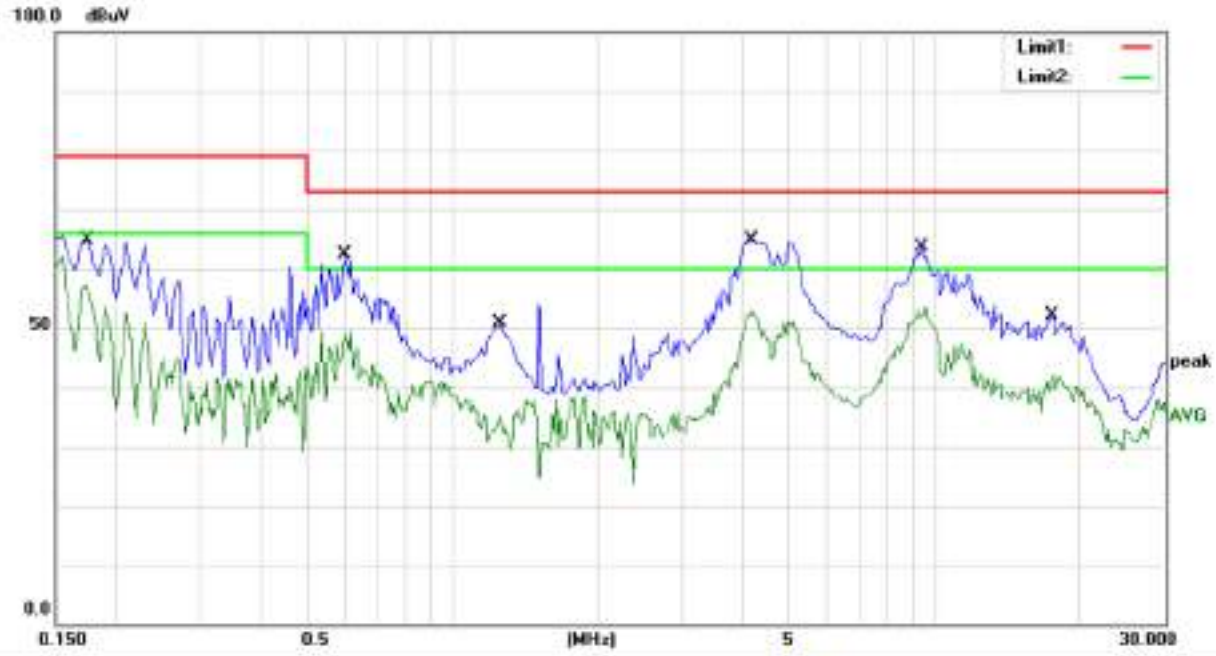
Please refer to the following pages.



Site Conduction #2 Phase: L1 Temperature: 22
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %
Mode: FULL LOAD
Note: LINE MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	71.08	0.00	71.08	79.00	-7.92	QP	
2		0.1500	60.73	0.00	60.73	66.00	-5.27	AVG	
3		0.6150	58.60	0.00	58.60	73.00	-14.40	QP	
4		0.6150	48.47	0.00	48.47	60.00	-11.53	AVG	
5		4.0700	61.94	0.00	61.94	73.00	-11.06	QP	
6		4.0700	50.58	0.00	50.58	60.00	-9.42	AVG	
7		5.0200	61.26	0.00	61.26	73.00	-11.74	QP	
8		5.0200	52.48	0.00	52.48	60.00	-7.52	AVG	
9		9.7300	63.00	0.00	63.00	73.00	-10.00	QP	
10	*	9.7300	55.60	0.00	55.60	60.00	-4.40	AVG	
11		29.8750	58.48	0.00	58.48	73.00	-14.52	QP	
12		29.8750	48.70	0.00	48.70	60.00	-11.30	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site: Conduction #2 Phase: L2 Temperature: 22

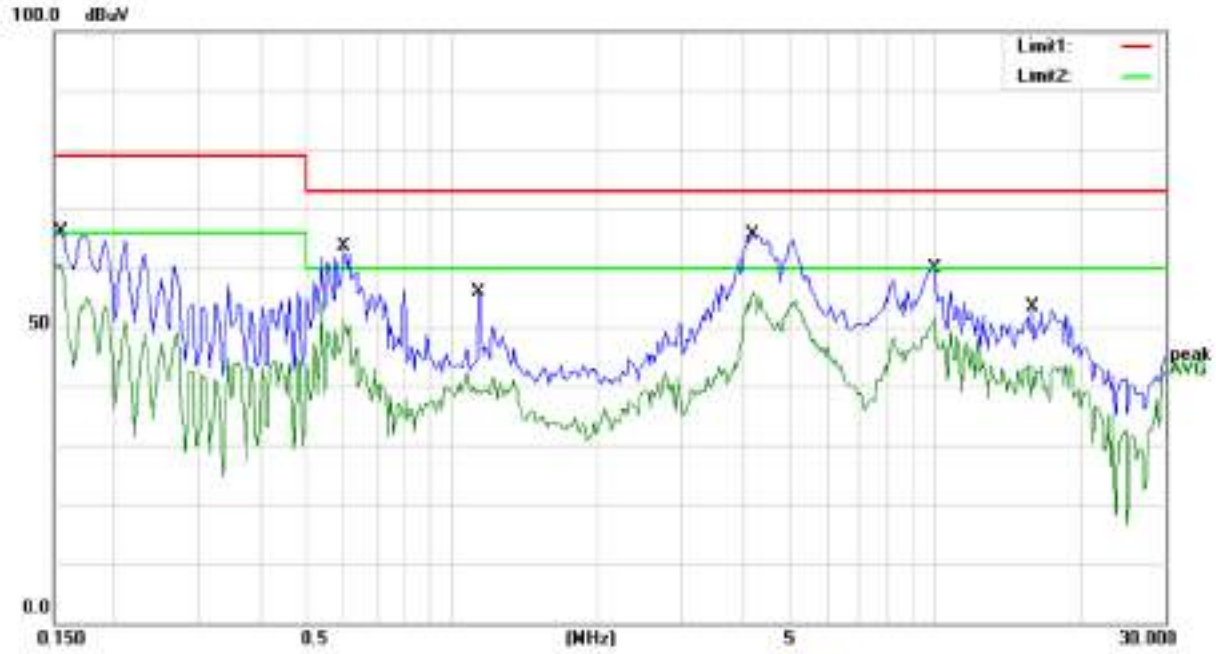
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %

Mode: FULL LOAD

Note: LINE MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1750	64.83	0.00	64.83	79.00	-14.17	QP	
2		0.1750	57.18	0.00	57.18	66.00	-8.82	AVG	
3		0.5950	62.42	0.00	62.42	73.00	-10.58	QP	
4		0.5950	49.43	0.00	49.43	60.00	-10.57	AVG	
5		1.2500	50.95	0.00	50.95	73.00	-22.05	QP	
6		1.2500	36.33	0.00	36.33	60.00	-23.67	AVG	
7		4.1700	64.82	0.00	64.82	73.00	-8.18	QP	
8		4.1700	52.83	0.00	52.83	60.00	-7.17	AVG	
9		9.3700	63.68	0.00	63.68	73.00	-9.32	QP	
10	*	9.3700	53.50	0.00	53.50	60.00	-6.50	AVG	
11		17.5500	52.01	0.00	52.01	73.00	-20.99	QP	
12		17.5500	40.94	0.00	40.94	60.00	-19.06	AVG	

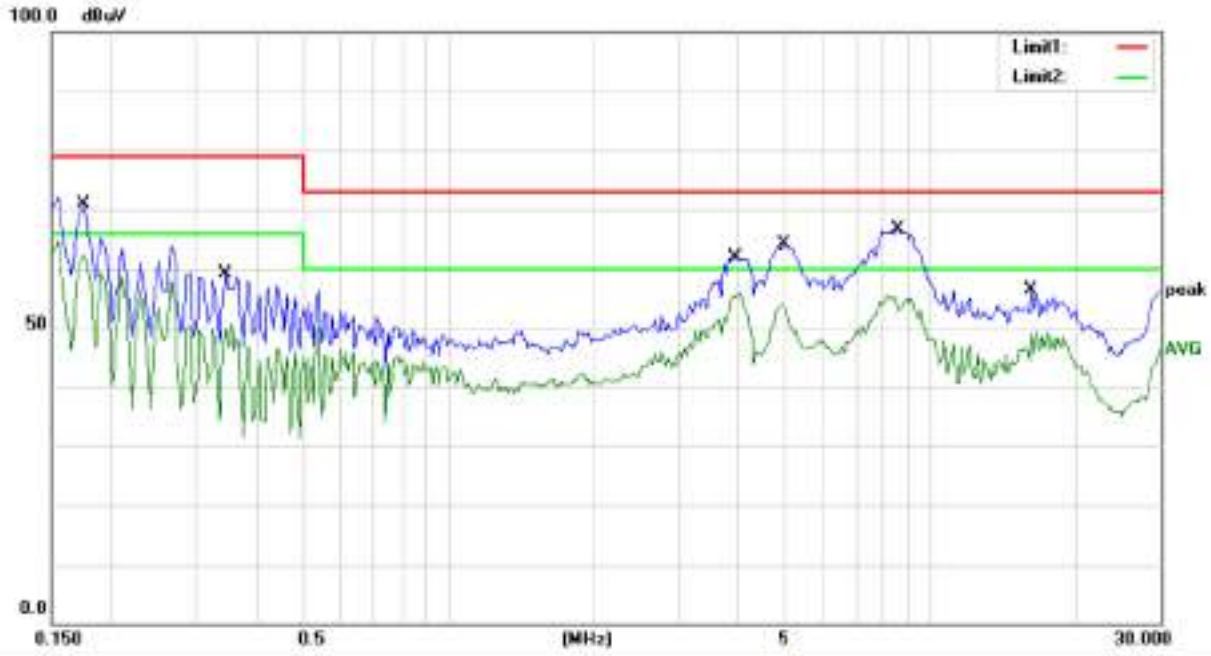
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: L3 Temperature: 22
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %
Mode: FULL LOAD
Note: LINE MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1550	66.23	0.00	66.23	79.00	-12.77	QP	
2		0.1550	60.75	0.00	60.75	66.00	-5.25	AVG	
3		0.5950	63.60	0.00	63.60	73.00	-9.40	QP	
4		0.5950	54.09	0.00	54.09	60.00	-5.91	AVG	
5		1.1400	55.76	0.00	55.76	73.00	-17.24	QP	
6		1.1400	42.01	0.00	42.01	60.00	-17.99	AVG	
7		4.1800	65.60	0.00	65.60	73.00	-7.40	QP	
8	*	4.1800	55.91	0.00	55.91	60.00	-4.09	AVG	
9		9.9700	59.91	0.00	59.91	73.00	-13.09	QP	
10		9.9700	51.57	0.00	51.57	60.00	-8.43	AVG	
11		16.0000	53.40	0.00	53.40	73.00	-19.60	QP	
12		16.0000	43.65	0.00	43.65	60.00	-16.35	AVG	

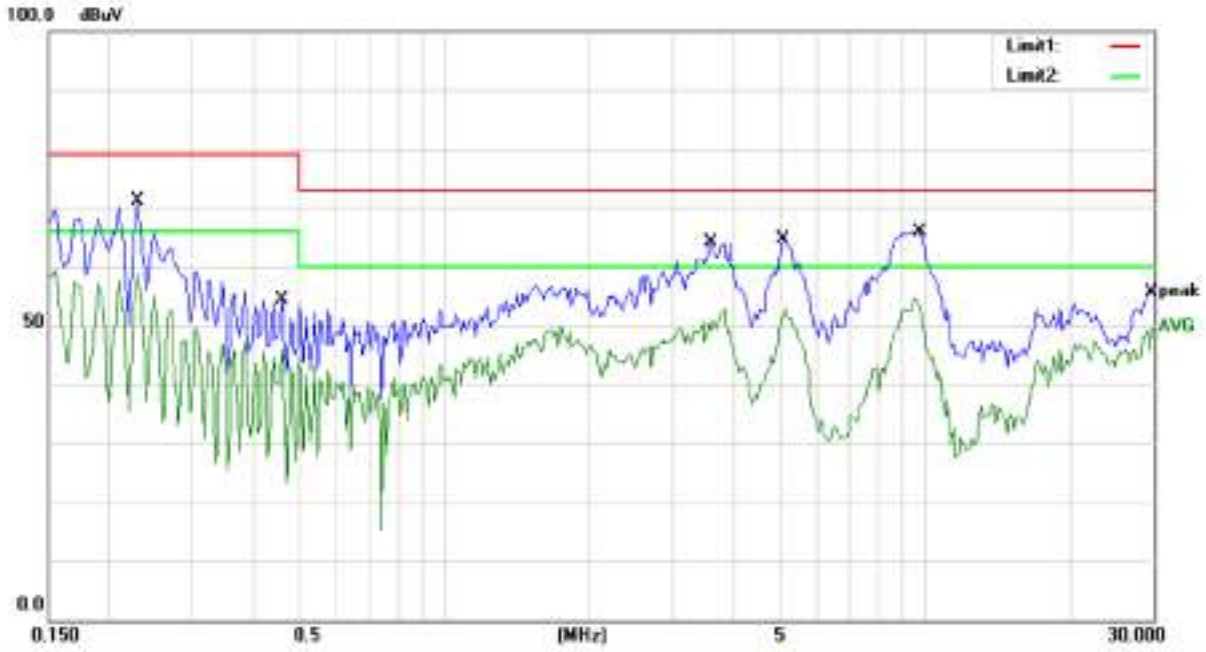
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: N Temperature: 22
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %
Mode: FULL LOAD
Note: LINE MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1750	70.87	0.00	70.87	79.00	-8.13	QP	
2	*	0.1750	62.33	0.00	62.33	66.00	-3.67	AVG	
3		0.3450	59.14	0.00	59.14	79.00	-19.86	QP	
4		0.3450	50.87	0.00	50.87	66.00	-15.13	AVG	
5		3.9600	61.81	0.00	61.81	73.00	-11.19	QP	
6		3.9600	55.89	0.00	55.89	60.00	-4.11	AVG	
7		5.0000	64.17	0.00	64.17	73.00	-8.83	QP	
8		5.0000	53.83	0.00	53.83	60.00	-6.17	AVG	
9		8.5700	66.57	0.00	66.57	73.00	-6.43	QP	
10		8.5700	55.33	0.00	55.33	60.00	-4.67	AVG	
11		16.1750	56.30	0.00	56.30	73.00	-16.70	QP	
12		16.1750	49.10	0.00	49.10	60.00	-10.90	AVG	

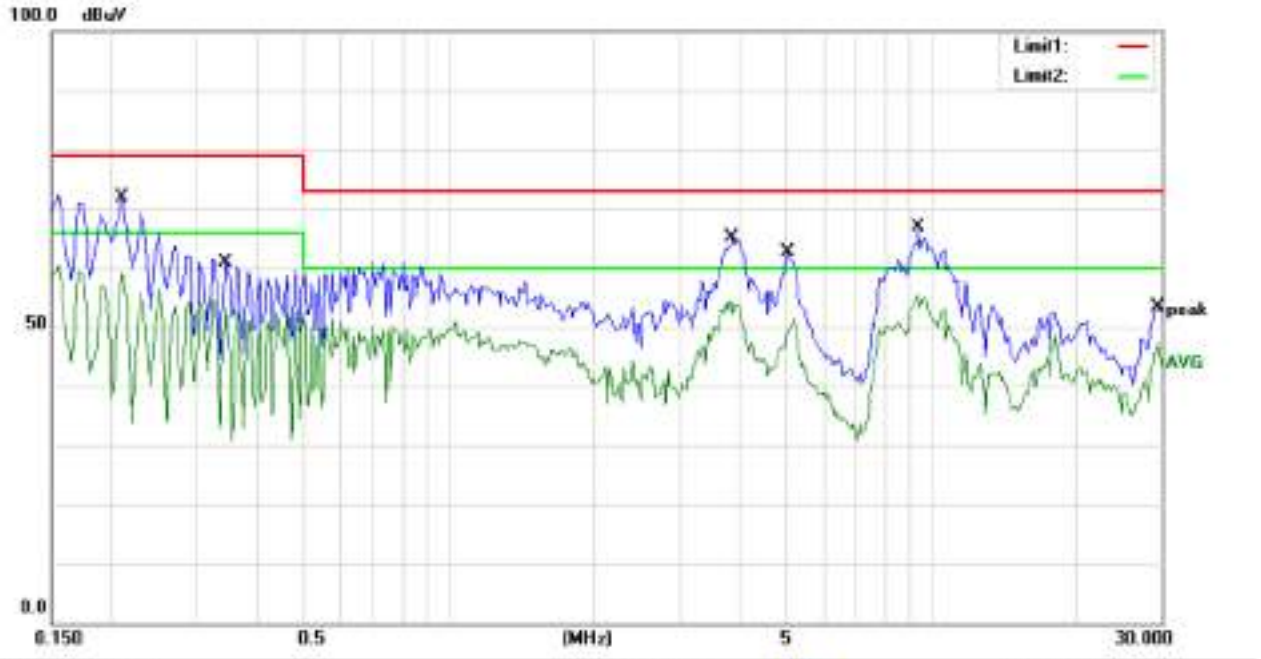
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: L1 Temperature: 22
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %
Mode: FULL LOAD
Note: BAT MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2300	71.16	0.00	71.16	79.00	-7.84	QP	
2		0.2300	58.81	0.00	58.81	66.00	-7.19	AVG	
3		0.4600	54.41	0.00	54.41	79.00	-24.59	QP	
4		0.4600	45.83	0.00	45.83	66.00	-20.17	AVG	
5		3.5900	64.14	0.00	64.14	73.00	-8.86	QP	
6		3.5900	52.80	0.00	52.80	60.00	-7.20	AVG	
7		5.0600	64.63	0.00	64.63	73.00	-8.37	QP	
8		5.0600	52.80	0.00	52.80	60.00	-7.20	AVG	
9		9.7900	65.95	0.00	65.95	73.00	-7.05	QP	
10	*	9.7900	54.61	0.00	54.61	60.00	-5.39	AVG	
11		29.7000	55.56	0.00	55.56	73.00	-17.44	QP	
12		29.7000	49.54	0.00	49.54	60.00	-10.46	AVG	

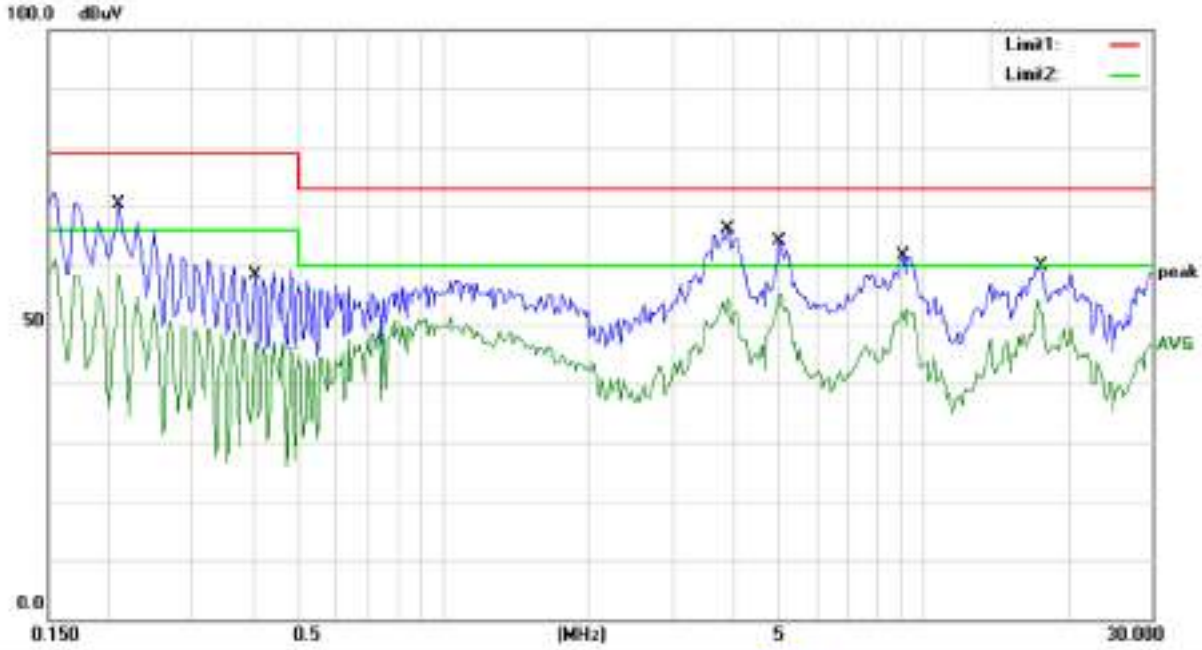
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site: Conduction #2 Phase: L2 Temperature: 22
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %
Mode: FULL LOAD
Note: BAT MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	71.98	0.00	71.98	79.00	-7.02	QP	
2		0.2100	59.22	0.00	59.22	66.00	-6.78	AVG	
3		0.3450	60.92	0.00	60.92	79.00	-18.08	QP	
4		0.3450	53.08	0.00	53.08	66.00	-12.92	AVG	
5		3.8800	65.06	0.00	65.06	73.00	-7.94	QP	
6		3.8800	54.47	0.00	54.47	60.00	-5.53	AVG	
7		5.0400	62.65	0.00	62.65	73.00	-10.35	QP	
8		5.0400	51.27	0.00	51.27	60.00	-8.73	AVG	
9		9.4300	66.76	0.00	66.76	73.00	-6.24	QP	
10	*	9.4300	55.31	0.00	55.31	60.00	-4.69	AVG	
11		29.5000	53.47	0.00	53.47	73.00	-19.53	QP	
12		29.5000	47.26	0.00	47.26	60.00	-12.74	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: L3 Temperature: 22

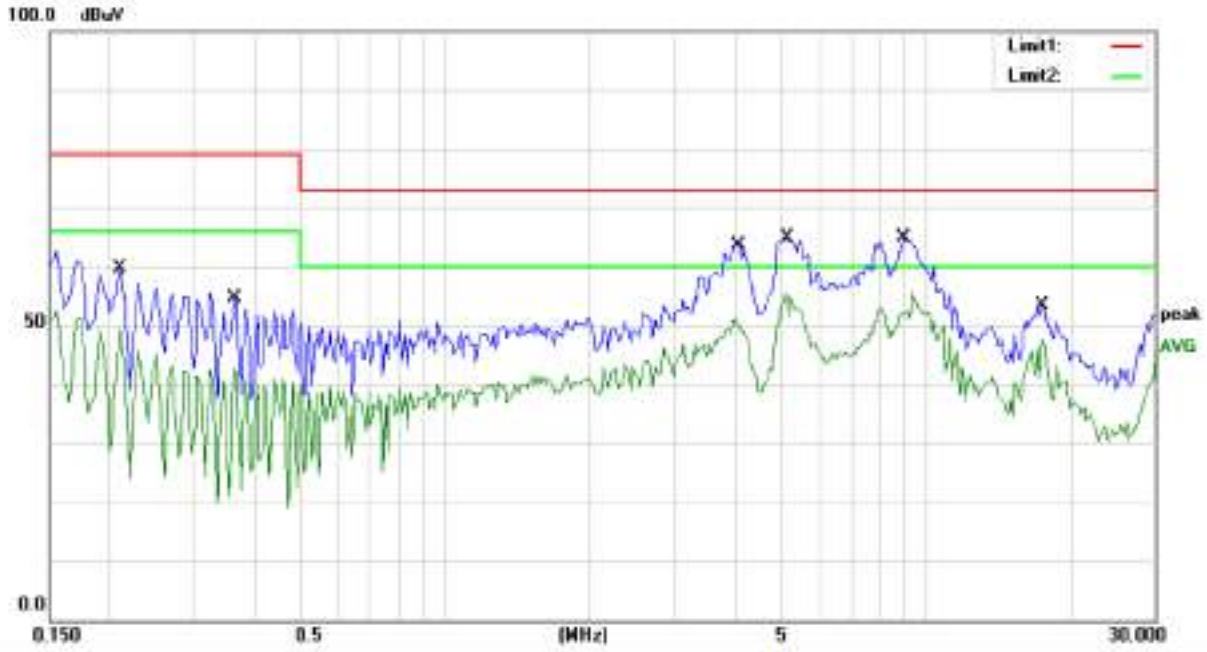
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %

Mode: FULL LOAD

Note: BAT MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	70.48	0.00	70.48	79.00	-8.52	QP	
2		0.2100	58.52	0.00	58.52	66.00	-7.48	AVG	
3		0.4050	58.32	0.00	58.32	79.00	-20.68	QP	
4		0.4050	47.72	0.00	47.72	66.00	-18.28	AVG	
5		3.9100	66.08	0.00	66.08	73.00	-6.92	QP	
6		3.9100	54.33	0.00	54.33	60.00	-5.67	AVG	
7		5.0300	64.10	0.00	64.10	73.00	-8.90	QP	
8	*	5.0300	55.10	0.00	55.10	60.00	-4.90	AVG	
9		9.0900	61.51	0.00	61.51	73.00	-11.49	QP	
10		9.0900	52.52	0.00	52.52	60.00	-7.48	AVG	
11		17.6000	59.93	0.00	59.93	73.00	-13.07	QP	
12		17.6000	54.04	0.00	54.04	60.00	-5.96	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: N Temperature: 22

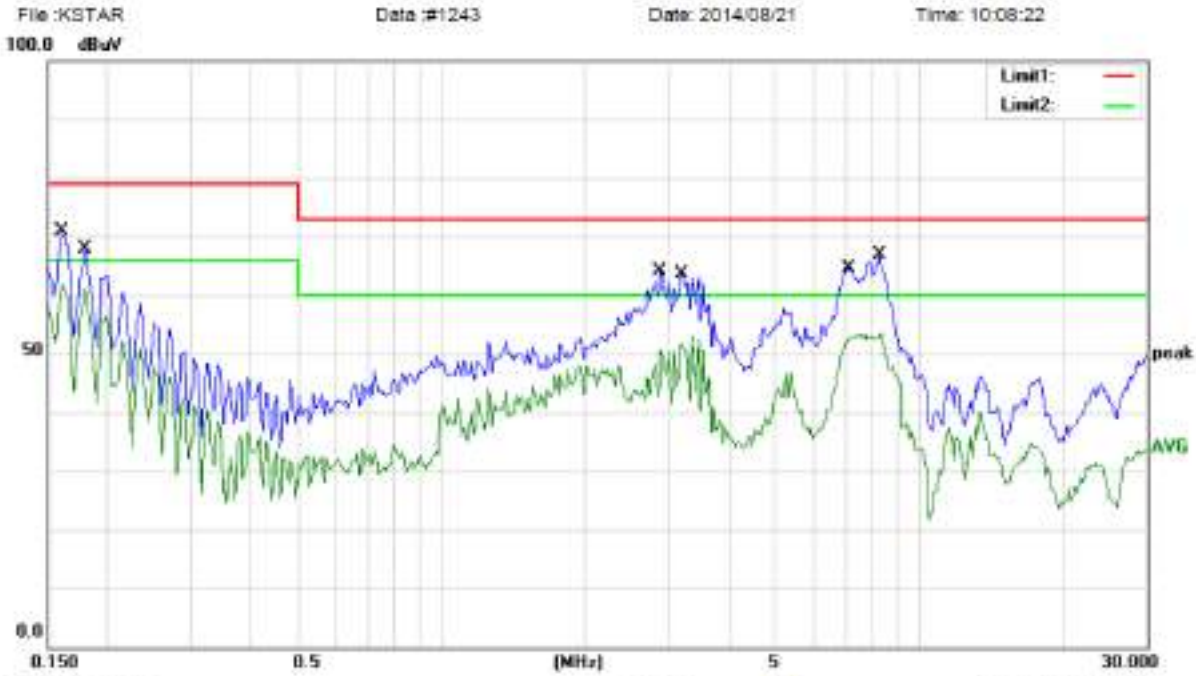
Limit: (CE)EN62040-2 C2_QP Power: AC 380V/50Hz Humidity: 53 %

Mode: FULL LOAD

Note: BAT MODE

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2100	59.69	0.00	59.69	79.00	-19.31	QP	
2		0.2100	49.39	0.00	49.39	66.00	-16.61	AVG	
3		0.3650	54.65	0.00	54.65	79.00	-24.35	QP	
4		0.3650	42.51	0.00	42.51	66.00	-23.49	AVG	
5		4.0900	63.65	0.00	63.65	73.00	-9.35	QP	
6		4.0900	51.07	0.00	51.07	60.00	-8.93	AVG	
7		5.1500	64.79	0.00	64.79	73.00	-8.21	QP	
8		5.1500	55.42	0.00	55.42	60.00	-4.58	AVG	
9		9.0000	64.84	0.00	64.84	73.00	-8.16	QP	
10	*	9.0000	55.95	0.00	55.95	60.00	-4.05	AVG	
11		17.5000	53.28	0.00	53.28	73.00	-19.72	QP	
12		17.5000	47.68	0.00	47.68	60.00	-12.32	AVG	

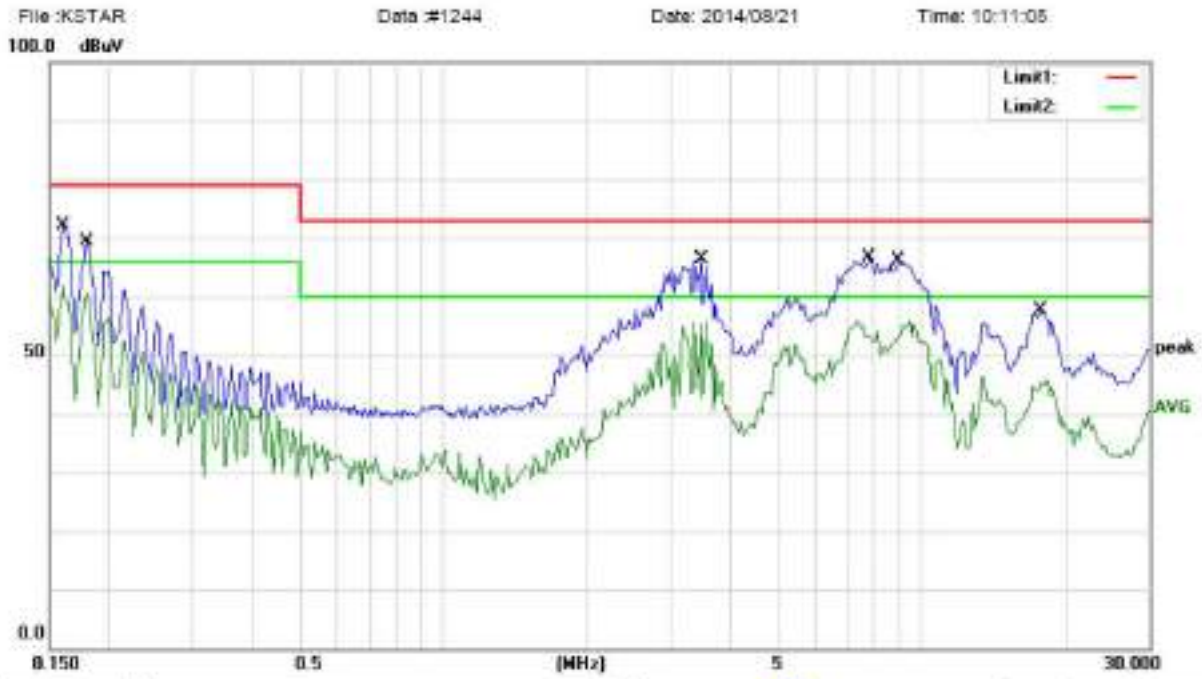
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HE



Site Conduction #2 Phase: L1 Temperature: 26
Limit: (CE)EN62040-2 C2_QP Power: AC380/60Hz Humidity: 55 %
EUT: UPS
M/N: YDC3340H
Mode: LINE MODE
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	70.83	0.00	70.83	79.00	-8.17	QP	
2	*	0.1600	61.86	0.00	61.86	66.00	-4.14	AVG	
3		0.1800	67.97	0.00	67.97	79.00	-11.03	QP	
4		0.1800	61.18	0.00	61.18	66.00	-4.82	AVG	
5		2.8800	64.22	0.00	64.22	73.00	-8.78	QP	
6		2.8800	50.75	0.00	50.75	60.00	-9.25	AVG	
7		3.1731	63.59	0.00	63.59	73.00	-9.41	QP	
8		3.1731	53.21	0.00	53.21	60.00	-6.79	AVG	
9		7.0997	64.53	0.00	64.53	73.00	-8.47	QP	
10		7.0997	53.38	0.00	53.38	60.00	-6.62	AVG	
11		8.2400	66.90	0.00	66.90	73.00	-6.10	QP	
12		8.2400	53.62	0.00	53.62	60.00	-6.38	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ



Site Conduction #2 Phase: L2 Temperature: 26

Limit: (CE)EN62040-2 C2_QP Power: AC380/60Hz Humidity: 55 %

EUT: UPS

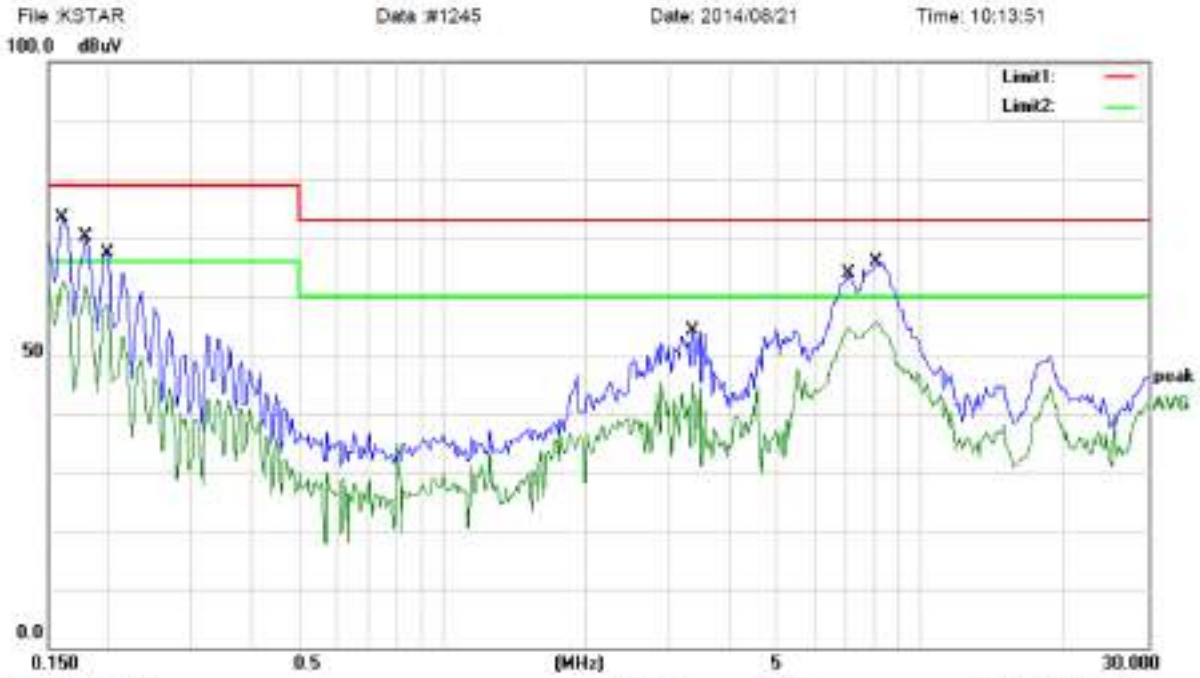
M/N: YDC3340H

Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	72.08	0.00	72.08	79.00	-6.92	QP	
2		0.1600	61.84	0.00	61.84	66.00	-4.16	AVG	
3		0.1800	69.39	0.00	69.39	79.00	-9.61	QP	
4		0.1800	60.51	0.00	60.51	66.00	-5.49	AVG	
5		3.4600	66.48	0.00	66.48	73.00	-6.52	QP	
6		3.4600	55.71	0.00	55.71	60.00	-4.29	AVG	
7		7.7800	66.62	0.00	66.62	73.00	-6.38	QP	
8	*	7.7800	55.91	0.00	55.91	60.00	-4.09	AVG	
9		8.9300	66.22	0.00	66.22	73.00	-6.78	QP	
10		8.9300	55.90	0.00	55.90	60.00	-4.10	AVG	
11		17.7250	57.53	0.00	57.53	73.00	-15.47	QP	
12		17.7250	45.85	0.00	45.85	60.00	-14.15	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ



Site Conduction #2 Phase: L3 Temperature: 26

Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 56 %

EUT: UPS

M/N: YDC3340H

Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	73.44	0.00	73.44	79.00	-5.56	QP	
2	*	0.1600	62.54	0.00	62.54	66.00	-3.46	AVG	
3		0.1800	70.16	0.00	70.16	79.00	-8.84	QP	
4		0.1800	61.87	0.00	61.87	66.00	-4.13	AVG	
5		0.2000	67.44	0.00	67.44	79.00	-11.56	QP	
6		0.2000	58.57	0.00	58.57	66.00	-7.43	AVG	
7		3.3500	54.07	0.00	54.07	73.00	-18.93	QP	
8		3.3500	45.39	0.00	45.39	60.00	-14.61	AVG	
9		7.0900	64.54	0.00	64.54	73.00	-8.46	QP	
10		7.0900	54.54	0.00	54.54	60.00	-5.46	AVG	
11		8.1400	65.96	0.00	65.96	73.00	-7.04	QP	
12		8.1400	55.23	0.00	55.23	60.00	-4.77	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ

Site Conduction #2 Phase: N Temperature: 25

Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 55 %

EUT: UPS

M/N: YDC3340H

Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1800	68.44	0.00	68.44	79.00	-10.56	QP	
2		0.1800	58.83	0.00	58.83	66.00	-7.17	AVG	
3		0.2150	67.92	0.00	67.92	79.00	-11.08	QP	
4		0.2150	57.97	0.00	57.97	66.00	-8.03	AVG	
5		2.7700	64.05	0.00	64.05	73.00	-8.95	QP	
6		2.7700	54.23	0.00	54.23	60.00	-5.77	AVG	
7		5.3300	64.00	0.00	64.00	73.00	-9.00	QP	
8	*	5.3300	55.68	0.00	55.68	60.00	-4.32	AVG	
9		7.4600	66.08	0.00	66.08	73.00	-6.92	QP	
10		7.4600	52.38	0.00	52.38	60.00	-7.62	AVG	
11		12.8250	61.75	0.00	61.75	73.00	-11.25	QP	
12		12.8250	51.45	0.00	51.45	60.00	-8.55	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ

Site Conduction #2 Phase: L1 Temperature: 26

Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 55 %

EUT: UPS

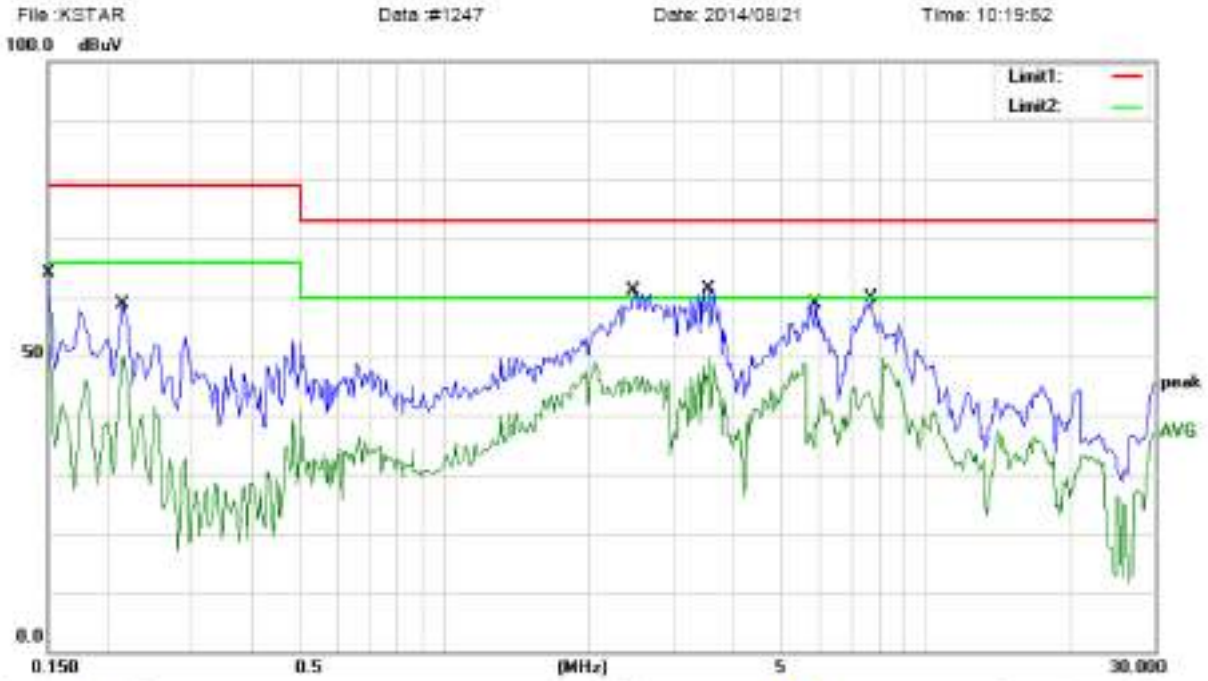
M/N: YDC3340H

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.5050	48.01	0.00	48.01	73.00	-24.99	QP	
2		0.5050	36.68	0.00	36.68	60.00	-23.32	AVG	
3		2.5800	60.55	0.00	60.55	73.00	-12.45	QP	
4		2.5800	47.86	0.00	47.86	60.00	-12.14	AVG	
5		3.4400	60.30	0.00	60.30	73.00	-12.70	QP	
6		3.4400	51.61	0.00	51.61	60.00	-8.39	AVG	
7		5.4400	58.69	0.00	58.69	73.00	-14.31	QP	
8		5.4400	45.37	0.00	45.37	60.00	-14.63	AVG	
9		7.6200	64.90	0.00	64.90	73.00	-8.10	QP	
10	*	7.6200	54.76	0.00	54.76	60.00	-5.24	AVG	
11		17.4000	50.59	0.00	50.59	73.00	-22.41	QP	
12		17.4000	41.90	0.00	41.90	60.00	-18.10	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ



Site Conduction #2 Phase: L2 Temperature: 26
Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 55 %
EUT: UPS
M/N: YDC3340H
Mode: BAT MODE
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	64.21	0.00	64.21	79.00	-14.79	QP	
2	*	0.1500	57.44	0.00	57.44	66.00	-8.56	AVG	
3		0.2150	58.98	0.00	58.98	79.00	-20.02	QP	
4		0.2150	49.99	0.00	49.99	66.00	-16.01	AVG	
5		2.4700	61.01	0.00	61.01	73.00	-11.99	QP	
6		2.4700	49.01	0.00	49.01	60.00	-10.99	AVG	
7		3.5500	61.48	0.00	61.48	73.00	-11.52	QP	
8		3.5500	49.77	0.00	49.77	60.00	-10.23	AVG	
9		5.9100	58.80	0.00	58.80	73.00	-14.20	QP	
10		5.9100	48.98	0.00	48.98	60.00	-11.02	AVG	
11		7.6900	59.87	0.00	59.87	73.00	-13.13	QP	
12		7.6900	49.66	0.00	49.66	60.00	-10.34	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver Operator: HJ

Site Conduction #2 Phase: L3 Temperature: 26

Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 55 %

EUT: UPS

M/N: YDC3340H

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.7050	53.63	0.00	53.63	60.00	-6.37	AVG	
2		0.7350	59.91	0.00	59.91	73.00	-13.09	QP	
3		2.5000	59.10	0.00	59.10	73.00	-13.90	QP	
4		2.5000	46.50	0.00	46.50	60.00	-13.50	AVG	
5		3.3700	50.67	0.00	50.67	60.00	-9.33	AVG	
6		3.7300	59.19	0.00	59.19	73.00	-13.81	QP	
7		7.6463	55.16	0.00	55.16	73.00	-17.84	QP	
8		8.9163	45.07	0.00	45.07	60.00	-14.93	AVG	
9		14.8250	48.78	0.00	48.78	60.00	-11.22	AVG	
10		18.3000	56.05	0.00	56.05	73.00	-16.95	QP	
11		20.7037	56.58	0.00	56.58	73.00	-16.42	QP	
12		21.1250	47.81	0.00	47.81	60.00	-12.19	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ

Site Conduction #2 Phase: N Temperature: 26

Limit: (CE)EN62040-2 C2_QP Power: AC380/50Hz Humidity: 55 %

EUT: UPS

M/N: YDC3340H

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	56.18	0.00	56.18	79.00	-22.82	QP	
2		0.1500	50.05	0.00	50.05	66.00	-15.95	AVG	
3		0.5050	52.91	0.00	52.91	73.00	-20.09	QP	
4		0.5050	42.36	0.00	42.36	60.00	-17.64	AVG	
5		2.2700	59.28	0.00	59.28	73.00	-13.72	QP	
6		2.2700	49.31	0.00	49.31	60.00	-10.69	AVG	
7	*	5.6233	65.75	0.00	65.75	73.00	-7.25	QP	
8		5.6233	49.21	0.00	49.21	60.00	-10.79	AVG	
9		7.1700	65.19	0.00	65.19	73.00	-7.81	QP	
10		7.1700	51.70	0.00	51.70	60.00	-8.30	AVG	
11		14.5000	47.01	0.00	47.01	73.00	-25.99	QP	
12		14.5000	37.63	0.00	37.63	60.00	-22.37	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HJ

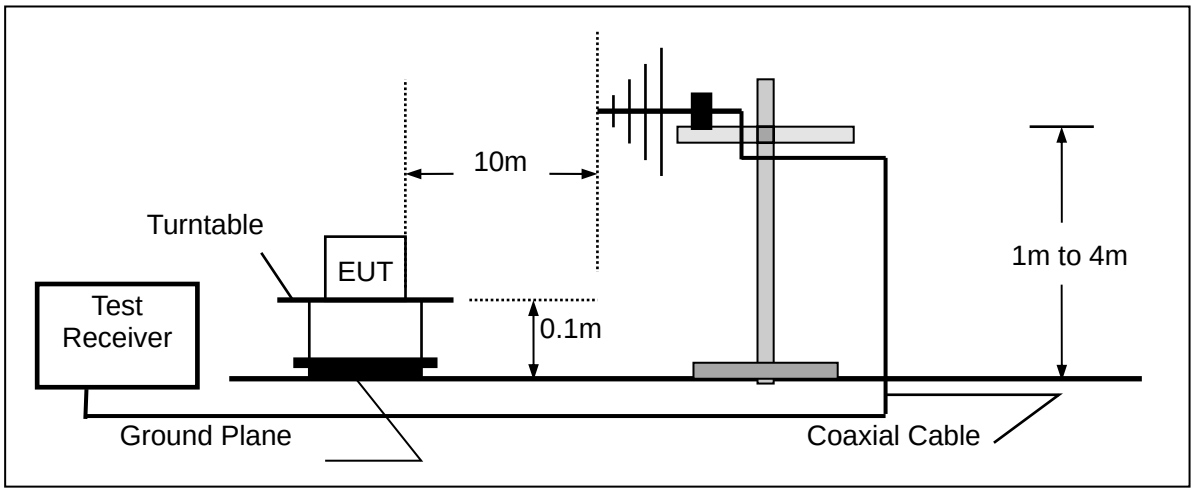
5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test

5.1.1.Block diagram of connection between the EUT and simulators

(EUT: Uninterruptible power systems)

5.1.2.Block diagram of test setup (In chamber)



(EUT: Uninterruptible power systems)

5.2. Measuring Standard

EN62040-2: 2006 Category C2

5.3. Radiated Emission Limits

All emanations from 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)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	10	40
230 ~ 1000	10	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 EN 62040-2 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.After that, let the EUT work in test mode (Line mode/Battery mode) and measure it.

5.6. Test Procedure

The EUT is placed on a turn table which is 0.1m high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 10 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 (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver is set at 120kHz.

5.7. Measuring Results

PASS.

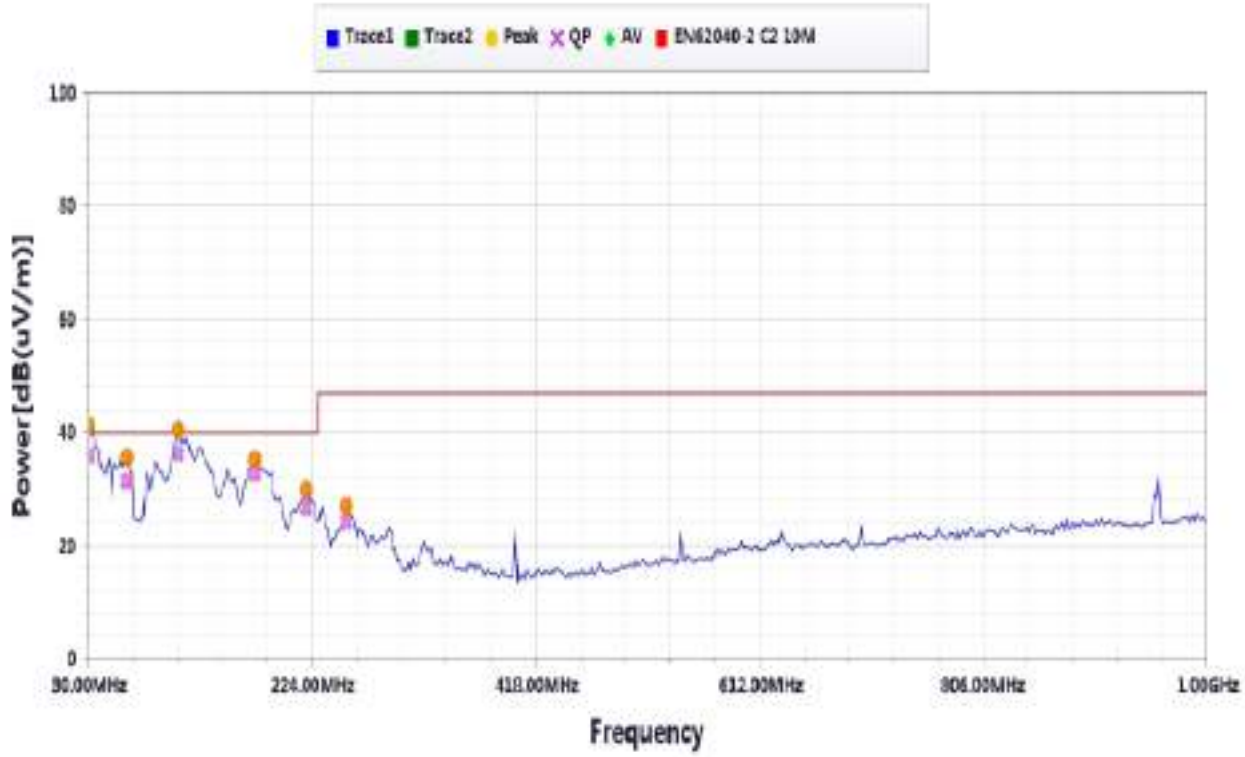
The frequency range from 30MHz to 1000MHz is investigated.

Data: 1

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Horizontal
Tester: CSL	Model: YDC3320H	Mode: FULL LOAD
Test Time:2014/1/17 10:10	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:LINE MOAE		

2. Chart



3. Result

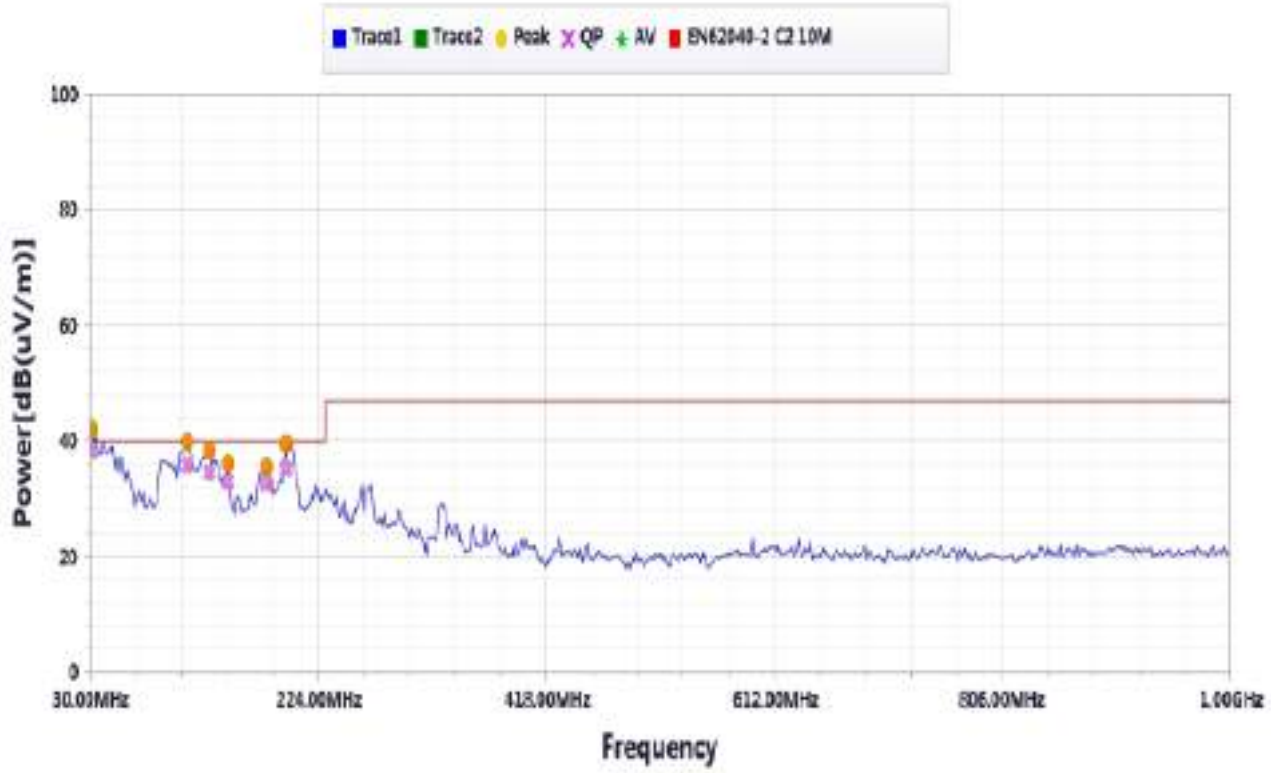
No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin Peak	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	dB	Degree	cm	
1	30.97	41.19	36.1	-32.91	74.1	40	1.19	-3.9			Pass
2	63.88	35.75	31.7	-31.18	66.93	40	-4.25	-8.3			Pass
3	108.41	40.73	36.4	-30.44	71.17	40	0.73	-3.6			Pass
4	174.24	35.41	32.8	-32.55	67.96	40	-4.59	-7.2			Pass
5	218.77	30.1	26.9	-30.43	60.53	40	-9.9	-13.1			Pass
6	253.62	27.03	24.3	-28.68	55.71	47	-19.97	-22.7			Pass

Data: 1

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Vertical
Tester: CSL	Model: YDC3320H	Mode: FULL LOAD
Test Time:2014/1/17 10:10	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:LINE MODE		

2. Chart



3. Result

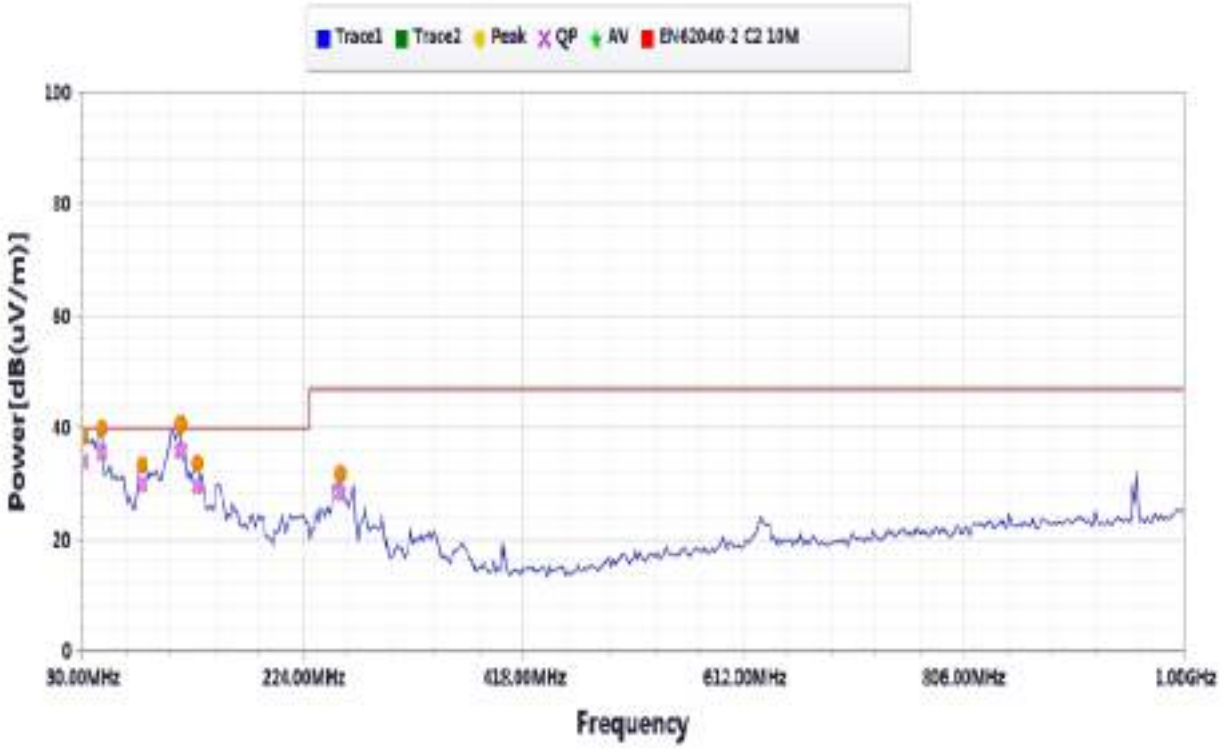
No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin Peak	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	dB	Degree	cm	
1	30.97	42.4	36.6	-32.85	75.25	40	2.4	-1.4			Pass
2	112.29	40.19	36.1	-31.73	71.92	40	0.19	-3.9			Pass
3	131.65	38.57	34.7	-35.02	73.59	40	-1.43	-5.3			Pass
4	147.14	36.19	33.2	-35.34	71.53	40	-3.81	-6.8			Pass
5	180.05	35.5	32.9	-33.2	68.7	40	-4.5	-7.1			Pass
6	197.48	39.84	35.4	-31.54	71.38	40	-0.16	-4.6			Pass

Data: 1

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Horizontal
Tester: CSL	Model: YDC3320H	Mode: FULL LOAD
Test Time:2014/1/17 10:17	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:BAT MOAE		

2. Chart



3. Result

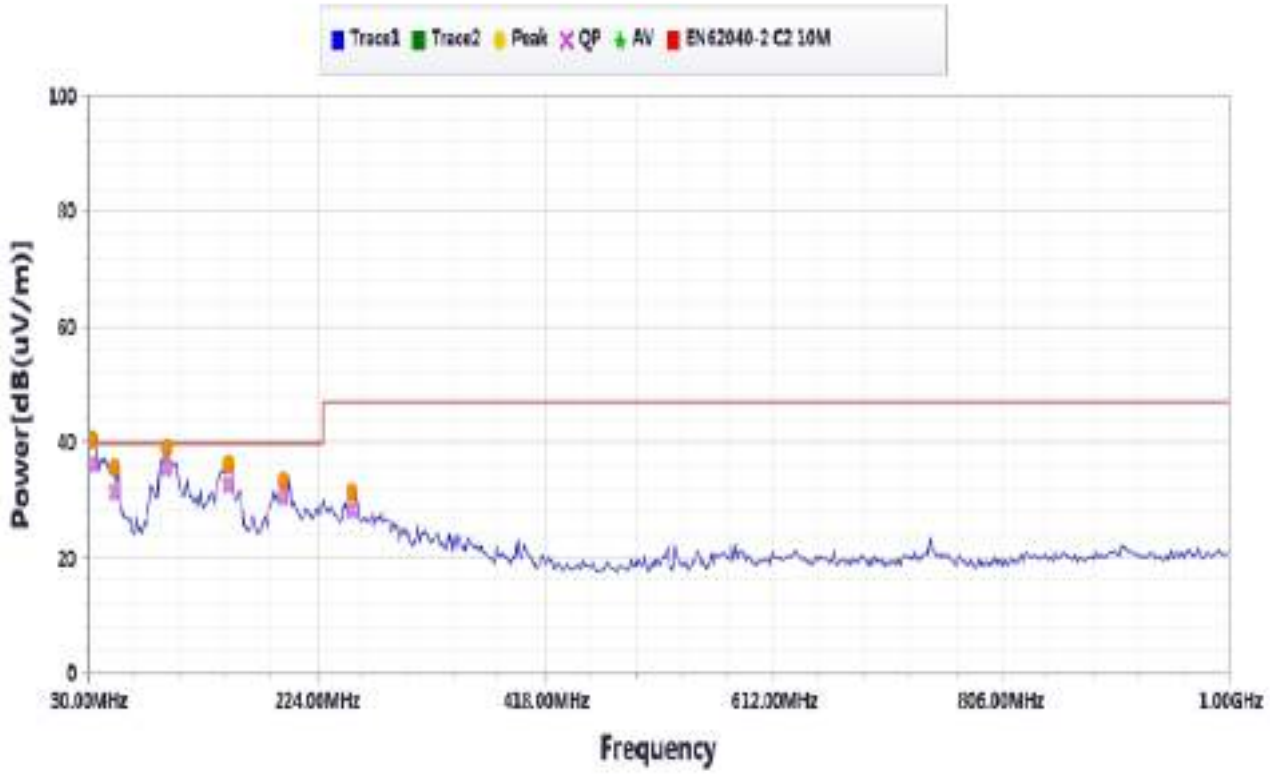
No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin Peak	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	dB	Degree	cm	
1	30.97	38.61	34.2	-32.91	71.52	40	-1.39	-5.8			Pass
2	46.46	39.96	35.6	-29.39	69.35	40	-0.04	-4.4			Pass
3	83.24	33.56	30.1	-34.51	68.07	40	-6.44	-9.9			Pass
4	116.16	40.72	35.9	-31.62	72.34	40	0.72	-4.1			Pass
5	131.65	33.74	29.6	-34.16	67.9	40	-6.26	-10.4			Pass
6	257.50	31.94	28.4	-28.57	60.51	47	-15.06	-18.6			Pass

Data: 1

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Vertical
Tester: CSL	Model: YDC3320H	Mode: FULL LOAD
Test Time:2014/1/17 10:17	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:BAT MODE		

2. Chart



3. Result

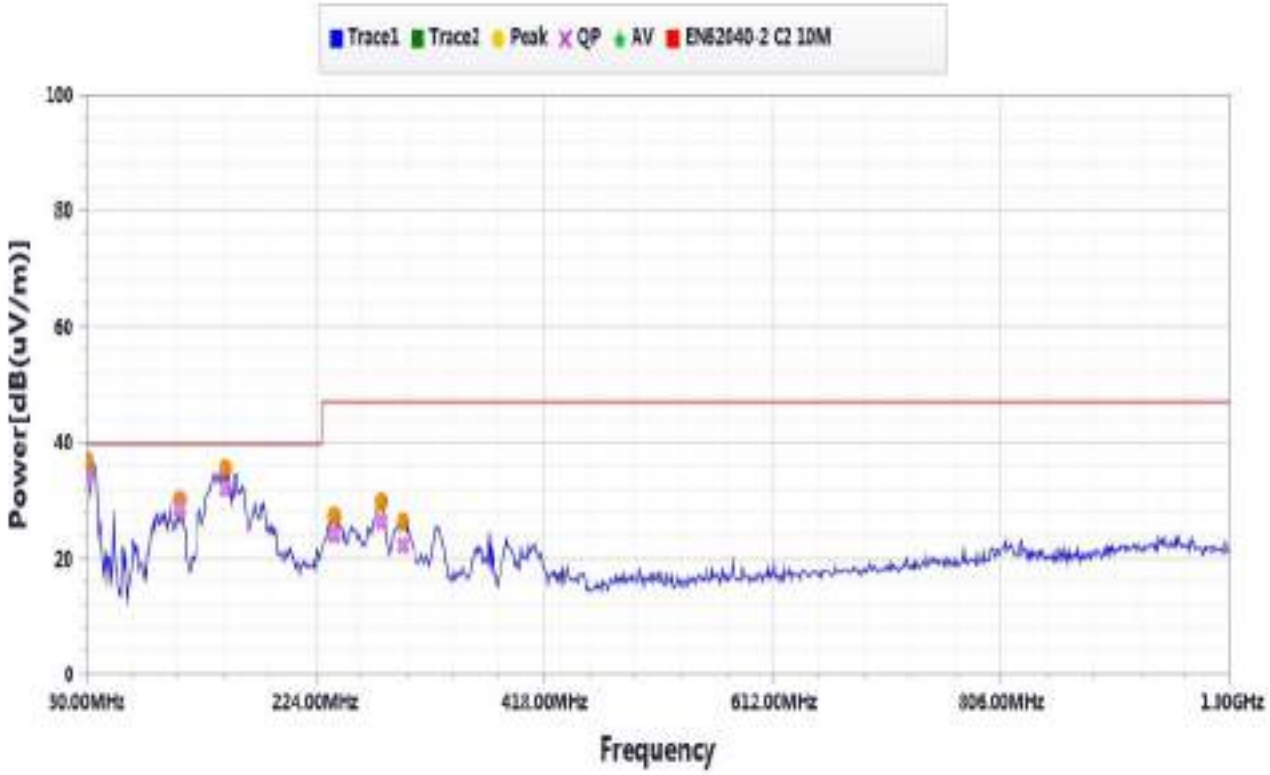
No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin Peak	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	dB	Degree	cm	
1	32.90	40.63	36.2	-32.74	73.37	40	0.63	-3.8			Pass
2	52.27	35.79	31.7	-29.79	65.58	40	-4.21	-8.3			Pass
3	96.80	39.05	35.7	-31.9	70.95	40	-0.95	-4.3			Pass
4	149.07	36.25	32.9	-35.29	71.54	40	-3.75	-7.1			Pass
5	195.54	33.55	30.6	-31.59	65.14	40	-6.45	-9.4			Pass
6	253.62	31.6	28.4	-29.86	61.46	47	-15.4	-18.6			Pass

Data: 5

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Horizontal
Tester: CSL	Model: YDC3340H	Mode: FULL LOAD
Test Time:2014/8/22 10:19	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:LINE MODE		

2. Chart



3. Result

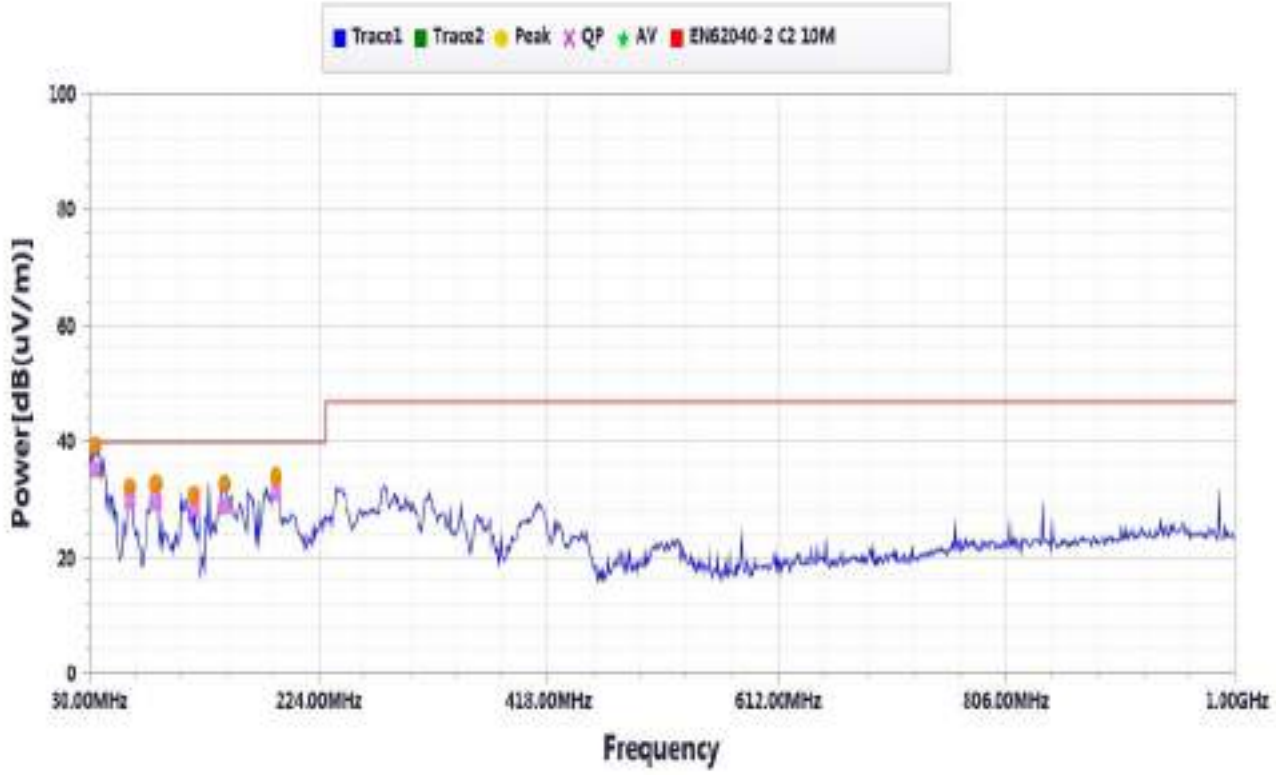
No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	Degree	cm	
1	31.45	36.89	34.2	-33.16	67.36	40	-5.8			Pass
2	108.98	30.21	28.6	-31.11	59.71	40	-11.4			Pass
3	148.71	35.55	32.1	-34.71	66.81	40	-7.9			Pass
4	239.80	27.45	24.3	-29.9	54.2	47	-22.7			Pass
5	280.49	29.83	26.5	-28.55	55.05	47	-20.5			Pass
6	297.94	26.44	22.5	-28.02	50.52	47	-24.5			Pass

Data: 5

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Vertical
Tester: CSL	Model: YDC3340M	Mode: FULL LOAD
Test Time:2014/8/22 10:19	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:LINE MODE		

2. Chart



3. Result

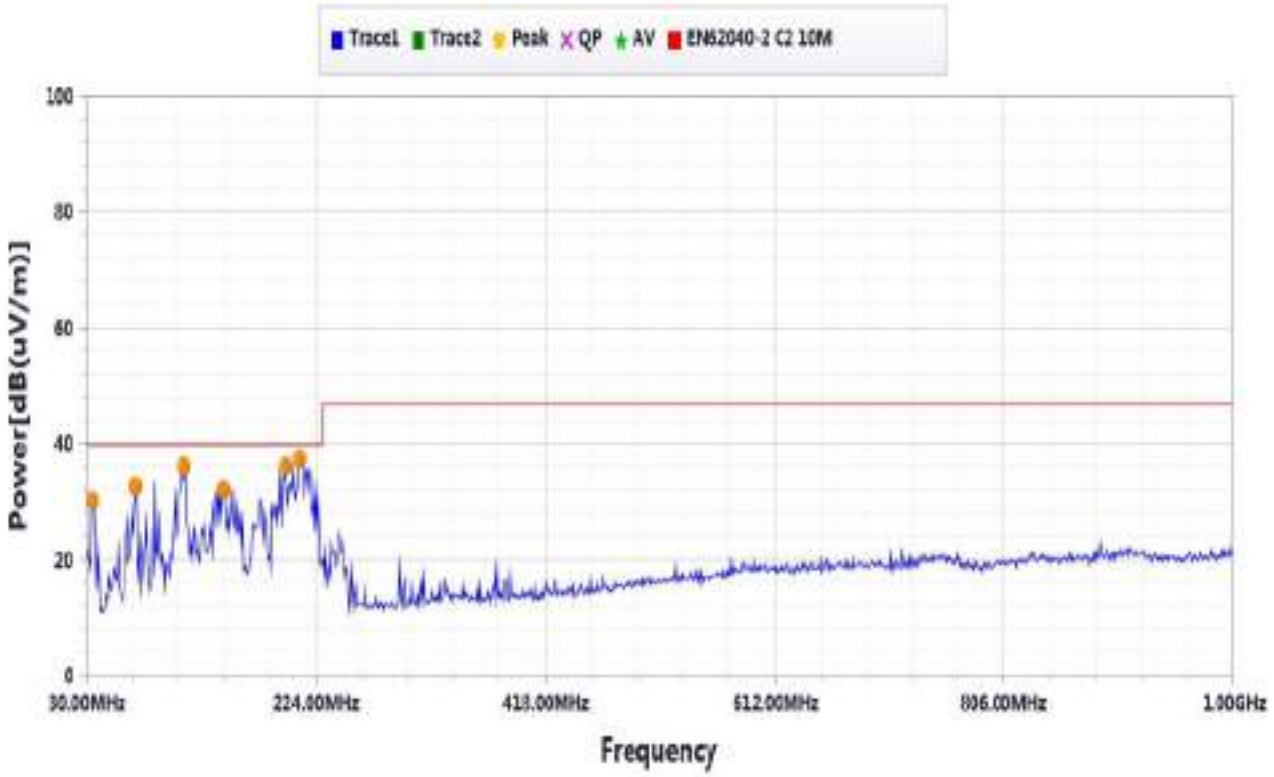
No	Frequency	QP	Correct factor	Reading level	Limit1	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	Degree	cm	
1	35.33	35.2	-32.12	67.32	40	-4.8			Pass
2	64.40	30	-31.29	61.29	40	-10			Pass
3	86.69	29.6	-33.62	63.22	40	-10.4			Pass
4	118.67	28.5	-32.12	60.62	40	-11.5			Pass
5	144.83	28.9	-34.38	63.28	40	-11.1			Pass
6	188.44	31.2	-31.22	62.42	40	-8.8			Pass

Data: 6

1. Settings

Start: 30MHz	Stop: 1GHz	
RBW: 100KHz	VBW: 300KHz	Ref: 100
RFAtt: 10	PreAmp: False	Polarization: Horizontal
Tester: CSL	Model: YDC3340H	Mode: FULL LOAD
Test Time:2014/8/22 10:26	Temperature:20	Humidity:53
Power:AC 380V/50Hz	Test Distance:10M	EUT:Uninterruptible Power supply
Note:BAT MODE		

2. Chart



3. Result

No	Frequency	Peak	QP	Correct factor	Reading level	Limit1	Margin Peak	Margin QP	Table Degree	Antenna Height	Result
	MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB(uV/m)	dB	dB	Degree	cm	
1	35.33	30.2	26.3	-32.34	58.64	40	-9.8	-13.7			Pass
2	72.15	32.95	30.2	-34.37	64.57	40	-7.05	-9.8			Pass
3	112.85	36.14	33.5	-31.62	65.12	40	-3.86	-6.5			Pass
4	145.80	32.24	29.5	-34.81	64.31	40	-7.76	-10.5			Pass
5	199.10	36.4	32.1	-30.97	63.07	40	-3.6	-7.9			Pass
6	210.72	37.61	34.1	-31.05	65.15	40	-2.39	-5.9			Pass

Standards EN62040-2: 2006 and IEC 62040-2:2005

TEST REPORT

For

SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.

Uninterruptible power systems

Model Number: YDC3310S, YDC3310H, YDC3315S, YDC3315H, YDC3320S,YDC3320H, YDC3330S,YDC3330H, YDC3340H

Battery bank: YDC-BT battery bank series

Prepared for	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.
Address	:	4/F, No.1 Bldg, Software Park, Keji C. Rd. 2nd, Hi-Tech Industrial Zone, Shenzhen 518057, P.R.China
Prepared by	:	SHENZHEN EMTEK CO., LTD.
Address	:	Bldg 69, Majialong Industry Zone, Nanshan District, Shenzen, Guangdong, China Tel: (0755) 26954280 Fax: (0755) 26954282

Report Number	:	ES160322007E
Date of Test	:	January 09, 2014 to January 21, 2014
Date of Report	:	March 24, 2016

TABLE OF CONTENT

Description Page

APPENDIX (Photos of EUT) (16 Pages)

TEST REPORT VERIFICATION

Applicant	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.
Manufacturer	:	SHENZHEN KSTAR SCIENCE AND TECHNOLOGY CO., LTD.
EUT	:	Uninterruptible power systems
Trademark	:	KSTAR
Model Number	:	YDC3310S, YDC3310H, YDC3315S, YDC3315H, YDC3320S,YDC3320H, YDC3330S,YDC3330H, YDC3340H
Power Supply	:	Please refer to page 8

Measurement Procedure Used:

EN62040-2: 2006, IEC 62040-2:2005
EN 61000-3-12: 2011
EN 61000-3-11: 2000
(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC 61000-4-4:2012, IEC 61000-4-5:2014, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004, IEC 61000-2-2:2002)

The device described above is tested by SHENZHEN EMTEK CO., LTD. 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 EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN 62040-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : January 09, 2014 to January 21, 2014

Prepared by : Vern Fan/Editor

Reviewer : Jessie Hu/Supervisor

Approved & Authorized Signer : Lisa Wang/Manager

Modified History

Rev.	Summary	Date of Rev.	Report No.
V1.0	Original Report	2016-03-24	ES160322007E

1. SUMMARY OF TEST RESULT

EMISSION			
Description of test item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN62040-2: 2006	C2	Pass
Radiated Disturbance	EN62040-2: 2006	C2	Pass
Harmonic Current Emissions	EN 61000-3-12: 2011	Class A	Pass
Voltage Fluctuation and Flicker	EN 61000-3-11: 2000	Section 5	Pass
Immunity			
Description of test item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
Radio-frequency, Continuous radiated disturbance	IEC 61000-4-3:2006+A1:2007 +A2:2010	A	Pass
EFT/B Immunity	IEC 61000-4-4:2012	B	Pass
Surge Immunity	IEC 61000-4-5:2014	B	Pass
Conducted RF Immunity	IEC 61000-4-6:2013	A	Pass
Power frequency magnetic field	IEC 61000-4-8:2009	A	Pass
Voltage dips and Voltage interruptions	IEC 61000-4-11:2004	B	Pass
Low Frequency signals	IEC 61000-2-2:2002	A	Pass
Note: /			