NVLAP LAB CODE 200707-0

Bay Area Compliance Lab Corp.

EN 61000-6-3: 2007, EN 50130-4: 1995+A1: 1998+A2: 2003
EN 61000-3-2: 2006, EN 61000-3-3: 1995+A1: 2001+A2: 2005

MEASUREMENT AND TEST REPORT

For

HENAN HANWEI ELECTRONICS CORPORATION LIMITED

No. 169, Xue Song Road, National Hi-Tech Zone, Zhengzhou 450001, China

Model Number: KAB

Report Type: Original Report	**Product Type:** Gas Alarm
Test Engineer:	Alex Huang, Peter Zhang
Report Number:	RSC081150006a -1
Reviewed By:	Name: David Li Title: BACL-Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China www.baclcorp.com

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Shenzhen) This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, NIST, or any agency of the Federal Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **HENAN HANWEI ELECTRONICS CORPORATION LIMITED** 's product, Model number: **KAB** or the "EUT" as referred to in this report is the **Gas Alarm,** rated input voltage: AC 230V/50Hz.

Objective

The following test report is prepared on behalf of **HENAN HANWEI ELECTRONICS CORPORATION LIMITED** in accordance with EN 61000-6-3, EN 50130-4, EN 61000-3-2 and EN 61000-3-3.

EN 61000-6-3: Electromagnetic compatibility (EMC) Part 6-3: Generic Standards — emission standard for residential, commercial and light-industrial equipments.

EN 50130-4: Alarm system—Part 4: Electromagnetic compatibility (EMC) —product family standard: immunity requirements for components of fire, instruder and social alarm systems.

EN 61000-3-2: Electromagnetic compatibility (EMC) Part 3-2: Limits for harmonic current emissions (equipment input current up to and including 16A phase).

EN 61000-3-3: Electromagnetic compatibility (EMC) Part 3-2 Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16A per phase and subject to conditional connection.

The objective of the manufacture is to determine compliance with EN 61000-6-3, EN 50130-4, EN 61000-3-2 and EN 61000-3-3.

Performance Criteria

A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.

B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.

C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with CISPR 16-1 - radio disturbance and immunity measuring apparatus, and CISPR 16-2 - Method of measurement of disturbances and immunity.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A

Special Accessories

All interface cables used for compliance testing are shielded as normally supplied by the applicant and their respective support equipment manufacturers.

Block Diagram/Schematics

Please refer to the Exhibit C.

Equipment Modifications

Block diagram/schematic were not prepared by the applicant at time of test.

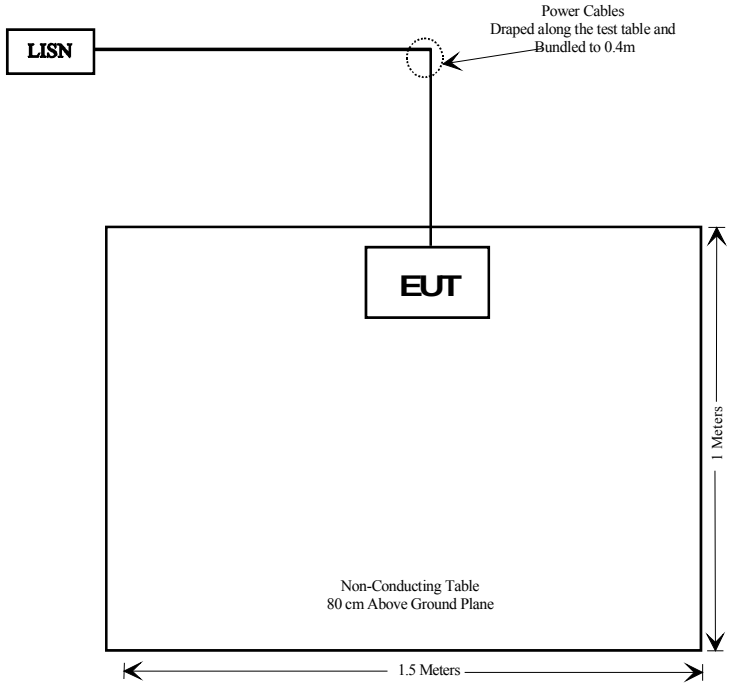
Equipment Under Test (EUT) General Description

Applicant	Description	Model Number	Serial Number	FCC ID
HENAN HANWEI ELECTRONICS CORPORATION LIMITED	Gas Alarm	KAB	N/A	N/A

External I/O Cable

Cable Description	Length (M)	From/Port	To
AC Power Cable	1.0	LISN	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

EN 61000-6-3, EN 61000-3-2 & EN 61000-3-3

Rule	Description	Result
EN 61000-6-3	Conducted Disturbance	Compliant
EN 61000-6-3	Radiated Disturbance	Compliant
EN 61000-3-2	Harmonic current Emissions	Compliant
EN 61000-3-3	Voltage Fluctuation and Flicker	Compliant

EN 50130-4

Rule	Description	Result
EN 50130-4	Electrostatic Discharge EN 61000-4-2	Compliant
	Continuous Radiated Disturbance EN 61000-4-3	Compliant
	Electrical Fast Transients EN 61000-4-4	Compliant
	Surges EN 61000-4-5	Compliant
	Continuous Conducted Disturbance EN 61000-4-6	Compliant
	Voltage Dips And Interruptions EN 61000-4-11	Compliant

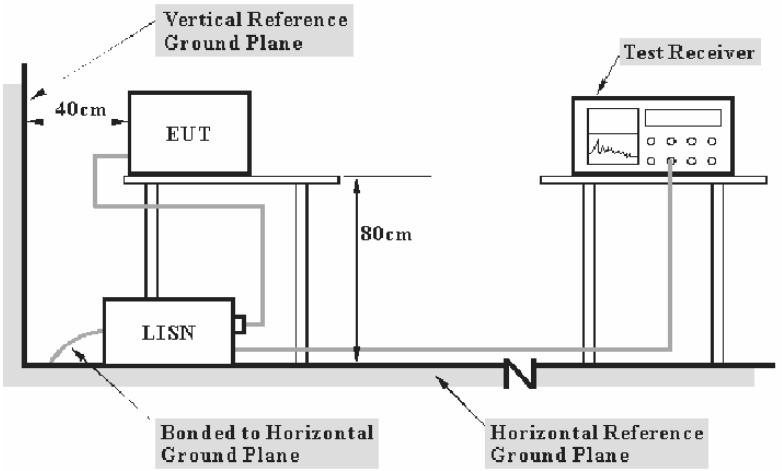
EN 61000-6-3 – CONDUCTED DISTURBANCE

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are EMI Test Receiver, cable loss, and L.I.S.N..

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with CISPR 16-1, CISPR16-2 measurement procedure. The specification used was the EN 61000-6-3 limits.

The external I/O cables and power cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

A 230V/50Hz power source was provided to EUT.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number
Com-Power	L.I.S.N.	LI-200	12005
Com-Power	L.I.S.N.	LI-200	12208
Rohde & Schwarz	EMI Test Receiver	ESCS30	DE25330
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021

***** Com-Power's L.I.S.N. were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination..

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the EN 61000-6-3, with the worst margin reading of:

-24.7 **dB** at 16.50 **MHz** in the **Neutral** mode with *the power of 230V AC/50Hz*

Test Result: Pass

Test Data

Environmental Conditions

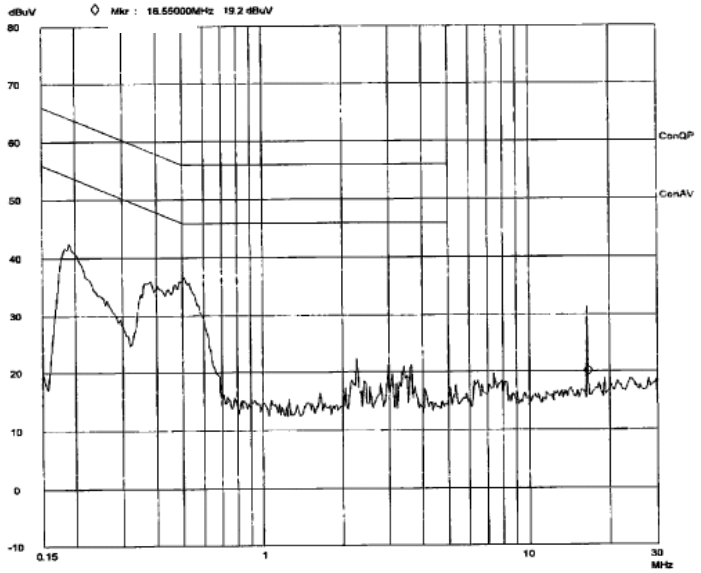
Temperature:	25 ° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa

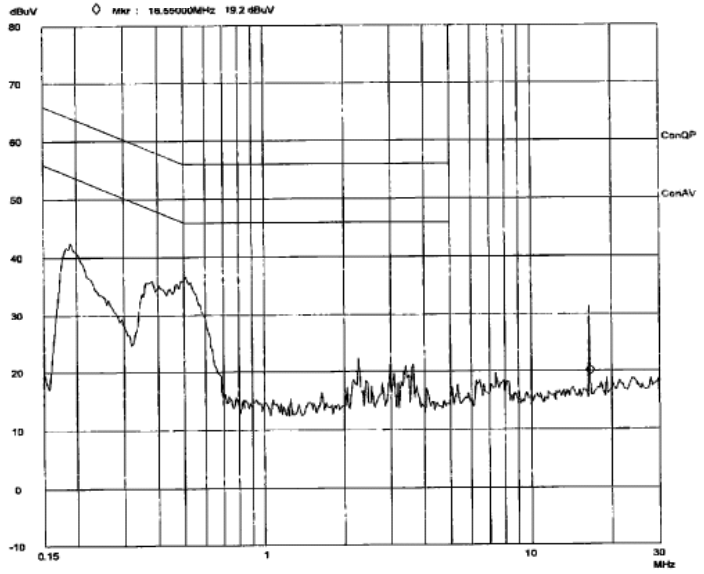
Test mode: EUT Operating mode

TERMINAL DISTURBANCE VOLTAGE TEST DATA				EN 61000-6-3	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBµV	QP/Ave/Peak	Line/Neutral	dBµV	dB
16.50	25.3	AV	Neutral	50	-24.7
0.49	30.3	QP	Neutral	56.17	-25.9
0.52	29.2	QP	Line	56	-26.8
0.19	37.0	QP	Neutral	64.04	-27.0
0.19	35.7	QP	Line	64.12	-28.4
16.48	30.8	QP	Line	60	-29.2
16.50	29.0	QP	Neutral	60	-31.0
16.48	18.6	AV	Line	50	-31.4
0.49	6.7	AV	Neutral	46.17	-39.5
0.52	6.2	AV	Line	46	-39.8
0.19	9.9	AV	Neutral	54.04	-44.1
0.19	9.2	AV	Line	54.12	-44.9

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.





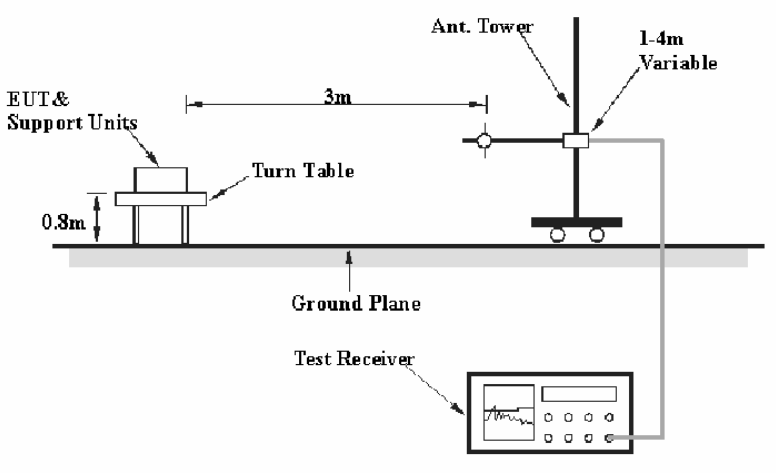
EN 61000-6-3 - RADIATED DISTURBANCE

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are EMI Test Receiver, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the CISPR 16-1, CISPR 16-2. The specification used was EN 61000-6-3 limits.

The external I/O cables and power cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

A 230V/50Hz power source was provided to EUT.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency	*R B/W*	*V B/W*	*IF B/W*
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number
HP	Amplifier	8447E	1937A01046
Rohde & Schwarz	EMI Test Receiver	ESCI	100224
Sunol Sciences	Bilog Antenna	JB1	A040904-2

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corr. Ampl. = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl - EN 61000-6-3 Limit

Test Results Summary

According to the test curves in the following, the EUT complied with the EN 61000-6-3,

Test Result: pass

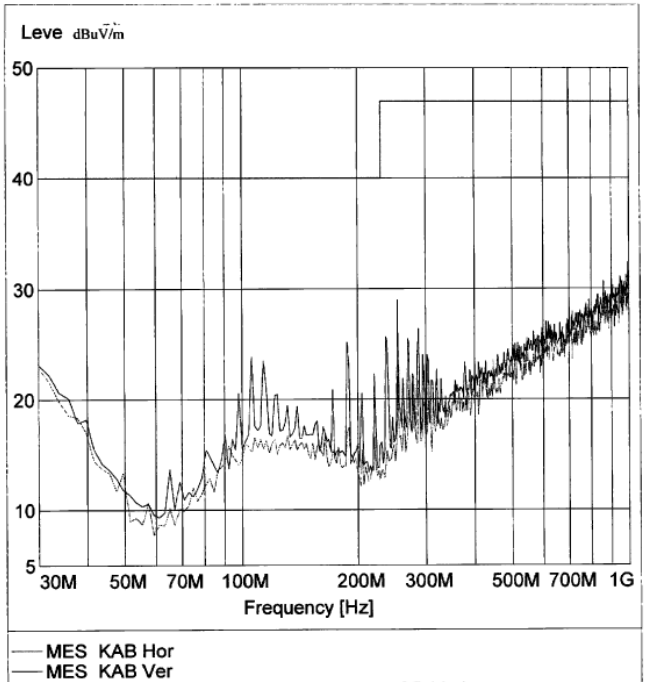
Test Curves

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	60%
ATM Pressure:	100.2 kPa

Testing mode: operating mode

Probe : Horizontal & Vertical
Comment : Temp.: 25 °C
Humi.: 60 %



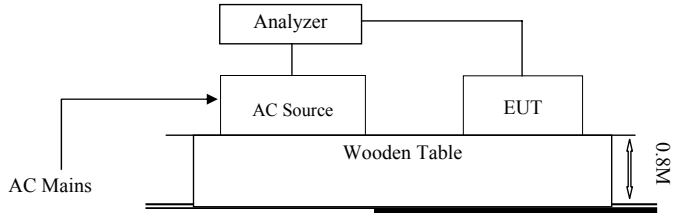
EN 61000-3-2-HARMONIC CURRENT EMISSIONS

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	Harmonic/Flicker Analyzer	DPA500	303278
EM Test	AC Source	ACS500	303276

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

EN 61000-3-2

Test Data

Measurement file name:	Harmonics_3_2
Standard used:	EN 61000-3-2
Observation time:	150s
Windows width:	16 periods - (EN/IEC 61000-4-7 Edition 2002)
Customer:	HENAN HANWEI ELECTRONICS CORPORATION LIMITED
E. U. T.:	Gas Alarm
Model Number:	KAB
Test Mode:	Operating Mode

The active input powe of this EUT is lower than 75W, Therefore, according to EN 61000-3-2, no limits are necessary.

Test Result: pass

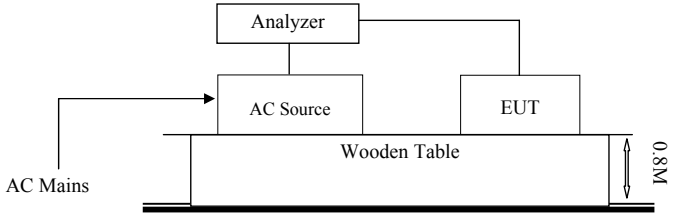
EN 61000-3-3- VOLTAGE FLUCTUATION AND FLICKER

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	Harmonic/Flicker Analyzer	DPA500	303278
EM Test	AC Source	ACS500	303276

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

EN 61000-3-3

Test Data

Standard used:	EN 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Customer:	HENAN HANWEI ELECTRONICS CORPORATION LIMITED
E. U. T.:	Gas Alarm
Model Number:	KAB
Test Mode:	Operating Mode

EUT: KAB
Test category: All parameters (European limits) **Test Margin: 100**
Comment: Communication

Test Result: Pass **Status: Test Completed**

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.01**			
Highest dt (%):	**0.01**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.000**	**Test limit:**	**1.000**	**Pass**

Test Result: pass

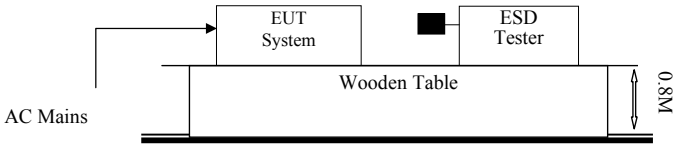
EN 50130-4 - ELECTROSTATIC DISCHARGES (EN61000-4-2)

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	ESD Tester	Dito	302105

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Remark: ■ is the tip of the electrode

EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

EN 50130-4 (EN 61000-4-2)
Test level 3 for Air Discharge at ±8 kV
Test level 2 for Contact Discharge at ±6 kV

Test 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

Performance criterion: A

Test Procedure

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.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of EN 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1 m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 20 single discharge 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.

Test Data

Environmental Conditions

Temperature:	25° C
Relative Humidity:	58%
ATM Pressure:	100.2 kPa

Test Mode: Operating mode

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Slots 20 Points	A	A	A	A	A	A	A	A	/	/
buttons 2 points	A	A	A	A	A	A	A	A	/	/
Leds 4 points	A	A	A	A	A	A	A	A		
Enclosure 40 Points	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Metal Part 10 Points	A	A	A	A	A	A	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	A	A	/	/	/	/

Test Result: pass

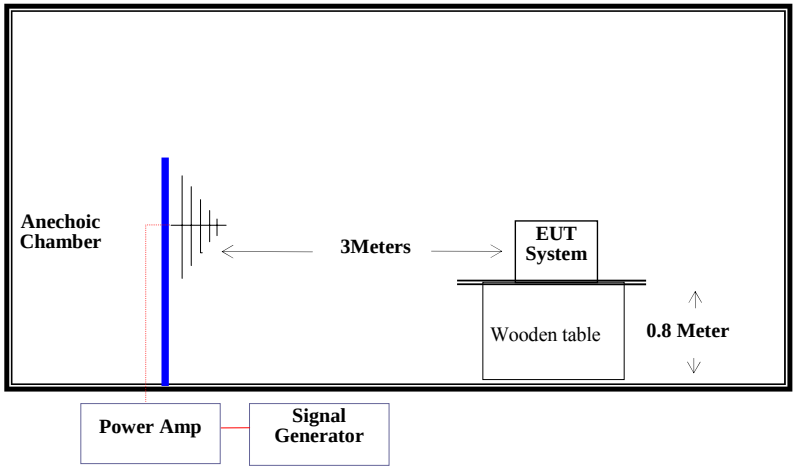
EN 50130-4 – CONTINOUS RADIATED DISTURBANCES (EN61000-4-3)

Test Equipment

Manufacturer	Description	Model	Serial Number
Amplifier Research	Amplifier	150W1000	302657
Amplifier Research	Field Meter	FM5004	302149
Amplifier Research	Sensor	FP5000	301825
HP	Signal Generator	HP8657A	2849U00982
Sunol Sciences	Broadband Antenna	JB1	A040904-1
Giga-tronics	Signal Generator	1026	270801
Sunol Sciences	Horn Antenna	DRH-118	A052604

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

EN 50130-4 (EN 61000-4-3)
Test level 3 at 10V / m (80-2000 MHz);

Test level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

Test Procedure

The EUT and its simulators are placed on a turn insulating support which is approximately 10 centimeters 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 EUT must be faced this transmitting antenna and measured individually.In order to judge the EUT performance, a CCD camera is used to monitor the EUT.All the scanning conditions are as follows**:**

	Condition of Test	Remarks
1.	Field Strength	10 V/m (Test level 3)
2.	Radiated Signal	Modulated AM 1 kHz 80% Modulation Scanning Frequency 80 – 2000 MHz
3.	Sweeping time of radiated	0.0015decade/s
4.	Dwell Time	1Sec.

Test Data

Environmental Conditions

Temperature:	25° C
Relative Humidity:	56%
ATM Pressure:	100Kpa

Test Mode: operating mode

Severity Level: 10 V/m Unmodulated, r.m.s

Frequency Range (MHz)	Front (10 V/m)		Rear (10 V/m)		Left Side (10 V/m)		Right Side (10 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-2000	A	A	A	A	A	A	A	A

Test Result: pass

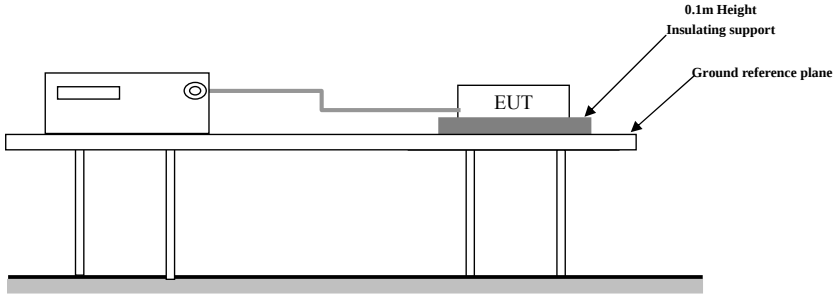
EN 50130-4 - ELECTRICAL FAST TRANSIENTS (EN61000-4-4)

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	Ultra Compact Generator	UCS500-M	303279
EM Test	Auto-transformer	MV2616	0403-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Ground Plane

Test Standard

EN 50130-4 (EN 61000-4-4)
Test level 3 at 2 kV On Power Supply Lines

Test 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

Performance criterion: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.2 kPa

Test Mode: operating mode

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0. 5	-0. 5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Line of EUT	L	A	A	A	A	A	A	/	/
	N	A	A	A	A	A	A	/	/
	PE	A	A	A	A	A	A	/	/
	L+N	A	A	A	A	A	A	/	/
	L+PE	A	A	A	A	A	A	/	/
	N+PE	A	A	A	A	A	A	/	/
	PE+L+N	A	A	A	A	A	A	/	/
Signal ports		/	/	/	/	/	/	/	/

Test Result: pass

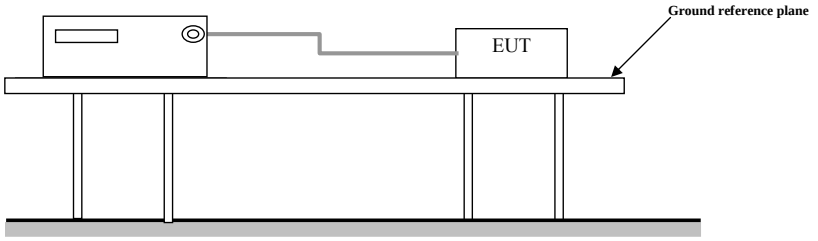
EN 50130-4 - SURGES (EN61000-4-5)

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	Ultra Compact Generator	UCS500-M	303279
EM Test	Auto-transformer	MV2616	0403-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Ground Plane

Test Standard

EN 50130-4 (EN 61000-4-5)
Line to Line: Test Level 2 at 1 kV
Line to Ground: Test level 3 at 2 kV

Test Level

Level	Open Circuit Output Test Voltage ±10%
1	0.5 kV
2	1 kV
3	2 kV
4	4 kV
X	Special

Performance criterion: B

Test Procedure

1) For line to line coupling mode, provide a 1 KV, Line to ground coupling mode, provide a 2 KV 1.2/50us voltage surge (at open-circuit condition).
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.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.2 kPa

Test Mode: Operating mode

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N, L-PE, N-PE	A	/
2	1kV	±	L-N, L-PE, N-PE	A	/
3	2kV	±	L-PE, N-PE	A	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Test Result: pass

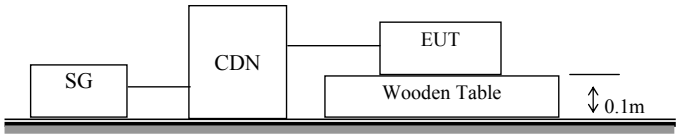
EN 50130-4 - CONTINUOUS CONDUCTED DISTURBANCE (EN61000-4-6)

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM	CDN	M3	303288
EM Test	C/S Tester	CWS500	303277
EM Test	Attenuator	6dB	303282
EM Test	Attenuator	6dB	303283
FCC	Bulk Current Injection Probe	F-120-9A	303284

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

EN 50130-4 (EN 61000-4-6)
Test level 3 at 10 V (e.m.f.), 0.15 MHz ~ 100MHz,

Test Level

Level	Voltage Level (e.m.f.) (V)
1	1
2	3
3	10
X	Special

Performance criterion: A

Test Procedure

1) Let the EUT work in test mode and test it.
2) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m 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).
3) The disturbance signal described below is injected to EUT's adapter through CDN.
4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
5) The frequency range is swept from 150 kHz to 100 MHz using 10V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
6) The rate of sweep shall not exceed 1.5*10-3decades/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.
7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa

Test mode: operating mode
Frequency range: 150 kHz – 100 MHz, 150Ωsource impedance.
Modulation: Amplitude, 80%, 1kHz sinusoidal; Pulse, 1Hz(0.5s ON; 0.5s OFF).
Severity Level: 10Vrms

Level	Voltage Level (e.m.f.) U_0	Pass	Fail
1	1	/	/
2	3	/	/
3	10	A	/
X	Special	/	/

Test Result: pass

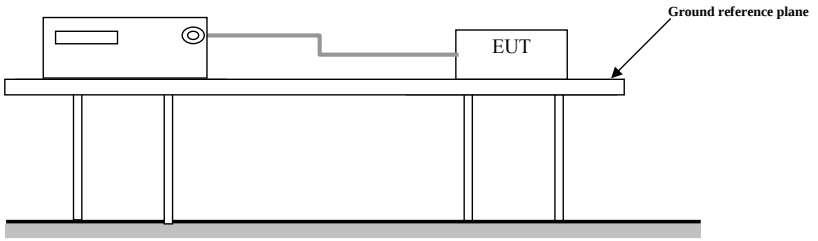
EN 50130-4 - VOLTAGE DIPS AND INTERRUPTIONS (EN61000-4-11)

Test Equipment

Manufacturer	Description	Model Number	Serial Number
EM Test	Ultra Compact Generator	UCS500-M	303279
EM Test	Auto-transformer	MV2616	0403-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Ground Plane

Test Standard

EN 50130-4 (EN 61000-4-11)
Test levels and Performance Criterion

Test Levels

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

Performance criterion: C & B

Test Procedure

1) The interruption is introduced at selected phase angles with specified duration.
2) Record any degradation of performance.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0 kPa

Test Mode: Operating mode

Table 1: Voltage Tips/Interruptions Test

Level	U2	td	Phase Angle	N	Pass	Fail
1	30%	10;20;100;200ms	0/90/180/270	3	B	
2	60%	10;20;100;200ms	0/90/180/270	3	B	/
3	100%	10;20;100ms	0/90/180/270	3	B	/

Table 2: Voltage Variation Test

Level	Voltage Variation			Pass	Fail
1	+10%	/	/	A	/
2	-15%	/	/	A	/

Test Result: pass

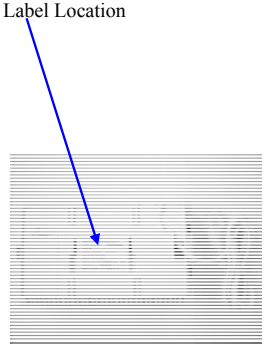
EXHIBIT A - PRODUCT LABELING

Proposed CE Label Format

Specifications: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.

Proposed Label Location on EUT

Label Location



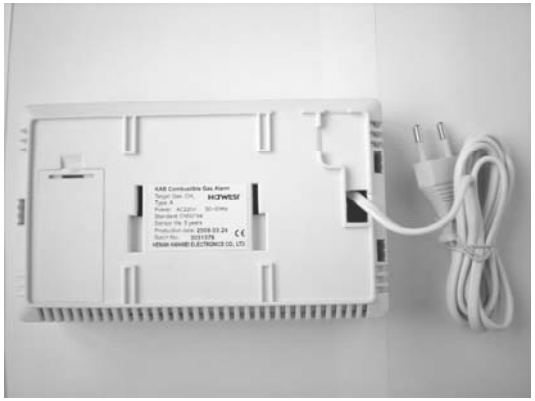
Product Manual

Product manual was not prepared by the applicant at time of test.

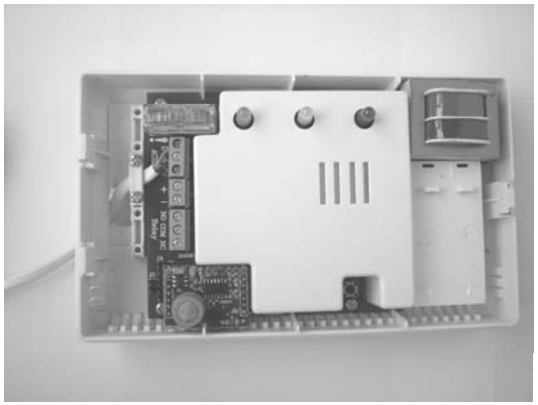
EXHIBIT B - EUT PHOTOGRAPHS

EUT FRONT VIEW

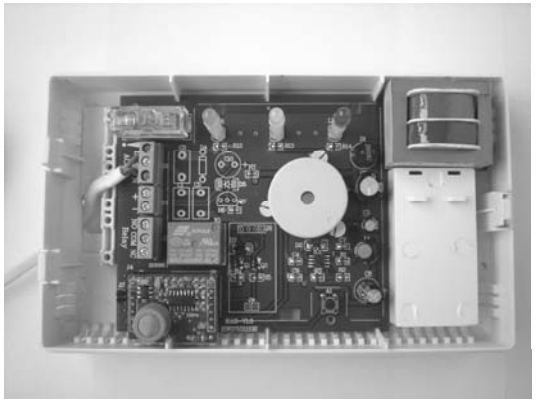
EUT REAR VIEW



EUT UNCOVERED VIEW 1



EUT UNCOVERED VIEW 2



END OF REPORT