



SAE TESTING CO., LTD

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Declaration of Compliance

Reference No.: CEN0806132

Applicant

JINHUA RCEXL CO.,LTD.

No.868 People west Road,Jinhua Zhejiang
321000, China.

Manufacturer

JINHUA RCEXL CO.,LTD.

No.868 People west Road,Jinhua Zhejiang
321000, China.

Product: GASENGINES IGNITION SYSTEM

Model No.: RCEXL A-01

Technical Data: 4.8V/6.0Vdc

Test Standards:

EN 61000-6-1:2001

EN 61000-6-3:2001/A11:2004

The above product has been tested by us with the listed standards and found in Compliance with the European Electromagnetic Compatibility Directive 2004/108/EC. It is possible to use CE marking to demonstrate the compliance with this EMC Directive.

EN 61000-6-1: Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments.

EN 61000-6-3: Electromagnetic Compatibility (EMC) Part 6-3: Generic Standards – Emission standard for Residential, Commercial and Light-Industrial Environments

The referred test report(s) show that the product complies with standard(s) recognized as giving presumption of compliance with the essential requirements in the above listed EU Directive(s). Other relevant Directives have to be observed.

After preparation of the necessary technical documentation as well as the conformity declaration the CE marking as shown below can be affixed on the equipment.

Manager

Date: June. 23, 2008



The statement is based on a single evaluation of one sample of above mentioned products. It does not imply an assessment of the whole production.

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EMC TEST REPORT



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APPLICATION FOR ELECTROMAGNETIC COMPATIBILITY DIRECTIVE

**On Behalf of
JINHUA RCEXL CO.,LTD.**

Gasengines Ignition System

Model: RCEXL A-01

Prepared for : JINHUA RCEXL CO.,LTD.
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Date of Test: June 20,2008
Date of Report: June 22,2008
Report Number: CEN0806132



EMC TEST REPORT

Reference No. : CEN0806132

Applicant : JINHUA RCEXL CO.,LTD.

Address : No.868 People west Road,Jinhua Zhejiang321000, China



Equipment Under Test (EUT) :

Product Name : Gasengines Ignition System

Model No. : RCEXL A-01

Standards : EN 61000-6-1:2001
EN 61000-6-3:2001/A11:2004

Date of Test : June 20,2008

Test Engineer : Nicole Wu

Reviewed By : Mike Wei

Test Result :	PASS *
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* The sample detailed above has been tested to the requirements of Council Directives 2004/108/EC (as amended by Directives 92/31/EEC and 93/68/EEC). The test results have been reviewed against the Directives above and found to meet their essential requirement



1 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	EN 61000-6-3:2001 /A11:2004	EN 55022:1998 +A2:2003	Class B	N/A
Radiation Emission, 30MHz to 1000MHz	EN 61000-6-3:2001 /A11:2004	EN 55022:1998 +A2:2003	Class B	PASS
Harmonic Emission on AC, 100Hz to 2kHz	EN 61000-3-2 : 2000 +A2:2005	EN 61000-3-2 : 2000 +A2:2005	Clause 7 of EN61000-3-2	N/A
Flicker Emission on AC	EN 61000-3-3 :1995 +A2:2005	EN 61000-3-3 :1995 +A2:2005	Clause 5 of EN61000-3-3	N/A
ESD	EN 61000-6-1:2001	EN 61000-4-2 :1995 + A2:2001	±4 kV Contact ±8 kV Air	PASS
Radiated Immunity (80MHz to 1GHz)	EN 61000-6-1:2001	EN 61000-4-3 : 2002 + A1:2002	3V/m, 80%, 1kHz, Amp. Mod.	PASS
Electrical Fast Transients (EFT) on AC and DC	EN 61000-6-1:2001	EN 61000-4-4 :2004	AC±1.0kV DC±0.5kV	N/A
Surge Immunity on AC	EN 61000-6-1:2001	EN 61000-4-5 :1995 +A1:2001	±1kV D.M.† ±2kV C.M.‡	N/A
Injected Currents on AC & DC, 150kHz to 80MHz	EN 61000-6-1:2001	EN 61000-4-6 :1996 +A1:2001	3Vrms(emf), 80%, 1kHz Amp. Mod.	N/A
Voltage Dips and Interruptions on AC	EN 61000-6-1:2001	EN 61000-4-11 :2004	>95 % U _T * for 0.5per >95 % U _T * for 250per 70 % U _T * for 25per	N/A

Remark:

A.M. Amplitude Modulation.

P.M. Pulse Modulation.

† D.M. – Differential Mode

* U_T is the nominal supply voltage



2	Contents	
		Page
1	TEST SUMMARY	2
2	CONTENTS.....	4
3	GENERAL INFORMATION	4
3.1	CLIENT INFORMATION.....	4
3.2	GENERAL DESCRIPTION OF E.U.T.....	4
3.3	DETAILS OF E.U.T.....	4
3.4	DESCRIPTION OF SUPPORT UNITS	4
3.5	STANDARDS APPLICABLE FOR TESTING	4
3.6	TEST FACILITY	6
3.7	TEST LOCATION	6
4	EQUIPMENT USED DURING TEST.....	7
5	EMISSION TEST RESULTS.....	11
5.1	RADIATION EMISSION DATA.....	11
5.1.1	Measurement Uncertainty.....	11
5.1.2	EUT Setup.....	11
5.1.3	Spectrum Analyzer Setup.....	11
5.1.4	Test procedure.....	12
5.1.5	Corrected Amplitude & Margin Calculation.....	12
5.1.6	Summary of Test Results.....	12
5.1.7	Radiated Emissions Test Data.....	13
5.1.8	Photographs – Radiation Emission Test Setup.....	14
6	IMMUNITY TEST RESULTS.....	15
6.1	PERFORMANCE CRITERIA DESCRIPTION.....	15
6.2	ESD.....	15
6.2.1	E.U.T. Operation.....	15
6.2.2	Direct Application Test Results.....	16
6.2.3	Indirect Application Test Results.....	16
6.2.4	Photographs - ESD Test Setup.....	17
6.3	RADIATED IMMUNITY.....	18
6.3.1	E.U.T. Operation.....	18
6.3.2	Test Results.....	18
6.3.3	Photographs - Radiated Immunity Test Setup For X-Direction.....	19
7	PHOTOGRAPHS - CONSTRUCTIONAL DETAILS	20
7.1	EUT - FRONT VIEW.....	20
7.2	EUT - BACK VIEW	20
7.3	EUT - OPEN VIEW.....	21
8	CE LABEL	22



3 General Information

3.1 Client Information

Applicant: JINHUA RCEXL CO.,LTD.
Address of Applicant: No.868 People west Road,Jinhua Zhejiang321000 China



3.2 General Description of E.U.T.

Product Name: Gasengines Ignition System

Model No.: RCEXL A-01

3.3 Details of E.U.T.

Power Supply: DC4.8 V/6.0V

3.4 Description of Support Units

The EUT has been tested as an independent unit.

3.5 Standards Applicable for Testing

The customer requested EMC tests for a Lithium polymer Rechargeable Battery Charger. The standards used were EN 55022 Class B, EN 61000-3-2 , EN 61000-3-3 for emissions & EN 55024 for immunity.

Table 1 : Tests Carried Out Under EN 55022:1998 +A2:2003

Standard		Status
EN 55022: 1998+A2:2003	Radiation Emission, 30MHz to 1000MHz	√
EN 55022: 1998+A2:2003	Mains Terminal Disturbance Voltage,150KHz to 30MHz	×



Table 2 : Tests Carried Out Under EN 61000-3-2: 2000 + A2: 2005 & EN 61000-3-3: 1995 + A2: 2005

EN 61000-3-2: 2000 + A2: 2005	Harmonic Emissions on AC	
EN 61000-3-3: 1995 + A2: 2005	Flicker Emissions on AC	

- √ Indicates that the test is applicable
 × Indicates that the test is not applicable

Table 3 : Tests Carried Out Under EN 55024:1998+A1: 2001

Standard		Status
EN 61000-4-2:1995 + A2:2001	Electro-static discharge	√
EN 61000-4-3:2002	Radio frequency EM fields (80MHz to 1GHz)	√
EN 61000-4-4:2004	Fast transients	×
EN 61000-4-5:1995 +A1:2001	Surges	×
EN 61000-4-6:1996+A1:2001	Radio frequency continuous conducted (150kHz to 80MHz)	×
EN 61000-4-11:2004	Voltage dips & interruptions	×

- √ Indicates that the test is applicable
 × Indicates that the test is not applicable



3.6 Test Facility

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

- **FCC – Registration No.: 759357**

Solid Industrial (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 759357, November 04, 2003.

3.7 Test Location

All Emissions tests were performed at:-

Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.



4 Equipment Used during Test

Equipment	Brand Name	Model	Cal. Int Months	Last Cal. Date
3m Anechoic chamber				
EMC Analyzer	Agilent	E7402A	12	2009-05
EMI Test Receiver	R&S	ESS	12	2009-05
Pre Amplifier	Anritsu	MH648A	12	2009-05
Bilog Antenna	SCHAFFNER	CBL6111C	12	2009-05
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	12	2009-05
Signal Generator	R&S	SMG	12	2009-05
RF Selector	TOYO	NS4901A	-	-
Turn Disc	HD	DS4150S	-	-
Antenna Mast	HD	MA2400	-	-
EMI Shielded Room				
Spectrum analyzer	ADVANTEST	R3261C	12	2009-05
EMI Test Receiver	R&S	ESS	12	2009-05
Pre Amplifier	Anritsu	MH648A	12	2009-05
LISN	Kyoritsu	KNW-403D	12	2009-05
LISN	Kyoritsu	KNW-407	12	2009-05
LISN	Kyoritsu	KNW-242C	12	2009-05
Absorbing Clamp	R&S	MDS-21	12	2009-05
Absorbing Clamp	R&S	MDS-21	12	2009-05
Absorbing Clamp	Kyoritsu	KT-20	12	-
Distortion Meter	MEGURO	MAK-6578A	12	2009-05
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	12	2009-05
Oscilloscope	LEADER	LS1020	12	2009-05
Function	National	VP-7422A	12	2009-05





Generator				
Signal Generator	R&S	SMG	12	
RF Selector	TOYO	NS4000	-	
RF Selector	TOYO	NS4900	-	
Remote Controller	TOYO	MAC	-	

**Harmonic & Flicker Test**

Signal Conditioning Unit	SCHAFFNER	CCN1000-1		
Signal Phase Impedance Network	SCHAFFNER	INA2152	12	2009-05
5KVA Power Source	ACSCHAFFNER	NSG1007		

List Of Test Equipment For EMS

Equipment	Brand Name	Model	Cal. Int Months	Last Cal. Date
3m Anechoic chamber				
EMC Analyzer	Agilent	E7402A	12	2009-05
EMI Test Receiver	R&S	ESS	12	2009-05
Pre Amplifier	Anritsu	MH648A	12	2009-05
Bilog Antenna	CHASE	CBL6111A	12	2009-05
Signal Generator	R&S	SMG	12	2009-05
Power Reflection Meter	R&S	NAP	12	2009-05
RF Power Amplifier	TOYO	AS300SSS	12	2009-05
Distortion Meter	HM-250	KNEWOOD	12	2009-05
Synthesized Function Generator	FC110	YOKOGAWA	12	2009-05
Noise Meter	MEGURO	MN-446A	12	2009-05
AM/FM Stereo Signal	Panasonic	VP-8122A	12	2009-05

SAE TESTING

Reference No.: CEN0806132



Generator				
Oscilloscope	LEADER	LS1020	12	
Function Generator	National	VP-7422A	12	
Signal Generator	R&S	SMG	12	
Turn Disc	HD	DS4150S	-	-
Isotropic Field Monitor	AR	FM2000	-	-
Antenna Mast	HD	MA2400	-	-
RF Selector	TOYO	NS4901A	-	-
Remote Controller	TOYO	MAC	-	-

TEST Room

Fast Transient Burst Generator	SCHAFFENR	NSG3025	12	2009-05
AC Power Supply	KIKUSUI	PCR2000L	12	2009-05
Electrostatic Discharge Simulator	Noiseken	ESS-200AX	12	2009-05
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	12	2009-05
Function Generator	National	VP-7422A	12	2009-05
AC Power Supply	KIKUSUI	PCR4000L	12	2009-05

Shielded Room

Spectrum analyzer	ADVANTEST	R3261C	12	2009-05
EMI Test Receiver	R&S	ESS	12	2009-05
Absorbing Clamp	R&S	MDS-21	12	2009-05
Milli-Voltmeter	R&S	URV3	12	2009-05
Absorbing Clamp	Kyoritsu	KT-20	12	-
Signal Generator	R&S	SMG	12	2009-05
Oscilloscope	LEADER	LS8022	12	2009-05
Audio Analyzer	R&S	UPA	12	2009-05
Milli-voltmeter	R&S	URV5	12	2009-05
Filter Unit	TOYO	NF8900	12	2009-05
RF Power Amplifier	EN	4111A	12	2009-05



RF Selector	TOYO	NS4000	-	-
RF Selector	TOYO	NS4000	-	-
RF Selector	TOYO	NS4000	-	-
Injection&Output Network for Audio Output	Kyoritsu	KSI-5104U	-	-
Mains Rejection Network	Kyoritsu	KSI-2004S	-	-
Mains Rejection Network	Kyoritsu	KSI-2005	-	-
Coupling Network"L"	Erika Fiedler	-	-	-
Coupling Network"A"	Erika Fiedler	-	-	-
Coupling Network"M"	Erika Fiedler	-	-	-
Rco Network(8Ω)	Erika Fiedler	-	-	-
Mains Filter	Erika Fiedler	-	-	-



5 Emission Test Results

5.1 Radiation Emission Data

Test Requirement: EN 61000-6-3
Test Method: EN 55022 Class B
Test Date: June 20, 2008
Frequency Range: 30MHz to 1000MHz
Class/Severity: Table 1 of EN 55022
Detector: Peak for pre-scan (120kHz Resolution Bandwidth)
Quasi-Peak & Average if maximised peak within 6dB
Limit



5.1.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, 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 Solid is ± 4.0 dB.

5.1.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the CISPR16-1, The specification used in this report was the EN 55022 Class B limits.

The EUT was placed on the test table in on mode

5.1.3 Spectrum Analyzer Setup

According to EN 55022 Class B Rules, the system was tested to 1000 MHz.

Start Frequency 30 MHz
Stop Frequency 1000 MHz
Sweep Speed Auto
IF Bandwidth 1 MHz
Video Bandwidth 1 MHz
Quasi-Peak Adapter Bandwidth 120 kHz
Quasi-Peak Adapter Mode Normal
Resolution Bandwidth 1MHz



5.1.4 Test procedure

For the radiated emissions test, since the EUT does have a power source, there was connection to AC outlets.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dBμV of specification limits), and are distinguished with a "Qp" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.



5.1.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

5.1.6 Summary of Test Results

According to the data in section 5.2.7, the EUT complied with the EN 55022 Class B standards.



5.1.7 Radiated Emissions Test Data

Radiated Disturbance

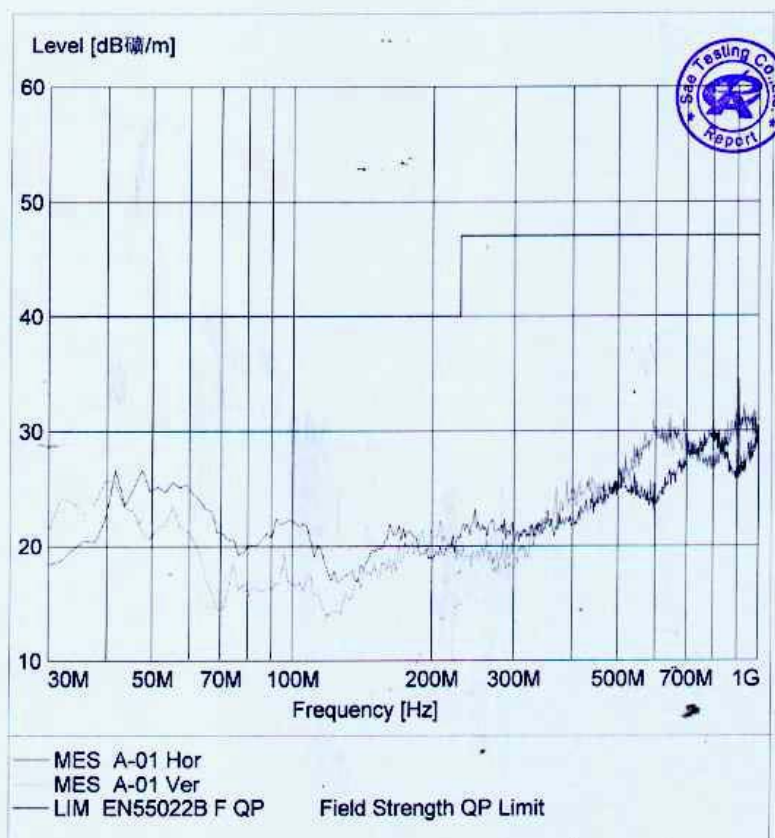
EUT: M/N: A-01

Operating Condition: On

Test Site: SOLID EMC Lab

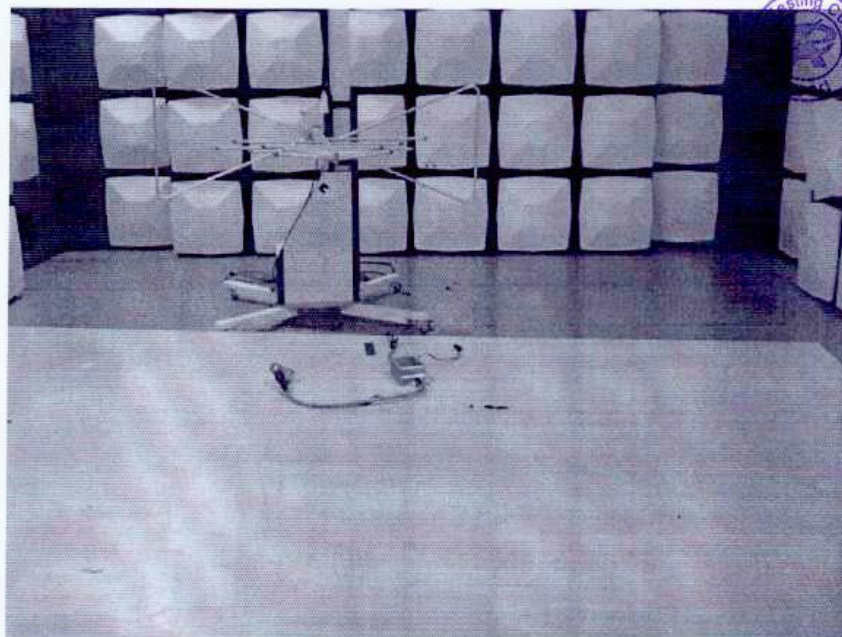
Test Specification: Horizontal & Vertical

Comment: AC230V/50Hz





5.1.8 Photographs – Radiation Emission Test Setup





6 Immunity Test Results

6.1 Performance Criteria Description

- Criterion A: The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the apparatus is used as intended.
- Criterion C: Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

For further details, please refer to EN 55024.

6.2 ESD

Test Requirement:	EN 61000-6-1
Test Method:	EN 61000-4-2
Test Date:	June 20,2008
Discharge Impedance:	330 Ω / 150 pF
Discharge Voltage:	Air Discharge: 8 kV Contact Discharge: 4 kV HCP & VCP: 4 kV
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

6.2.1 E.U.T. Operation

Operating Environment:	
Temperature :	24.0 °C
Humidity :	52 % RH
Barometric Pressure :	1012 mbar

EUT Operation:

Compliance test was performed in on mode.



6.2.2 Direct Application Test Results

Observations : Test points : 1. All Exposed Surface & Seams;
2. All matellic part

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
8	+/-	1	N/A	A
4	+/-	2	A	N/A

Results

A: No degradation in the performance of the E.U.T. was observed.

N/A: Not applicable.

6.2.3 Indirect Application Test Results

Observations : Test points : 1. All sides.

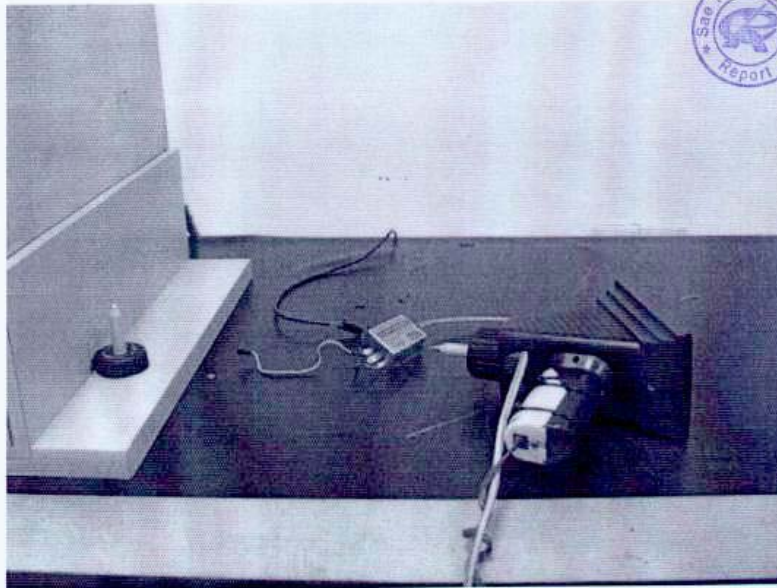
Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1	A	A

Results

A: No degradation in the performance of the E.U.T. was observed.



6.2.4 Photographs - ESD Test Setup





6.3 Radiated Immunity

Test Requirement: EN 61000-6-1
Test Method: EN 61000-4-3
Frequency Range: 80MHz-1GHz
Face Under Test: Three Mutually Orthogonal Faces
Severity: 3V/m, 1kHz, 80% Amp. Mod. from 80MHz to 1GHz
Test Date: June 20,2008



6.3.1 E.U.T. Operation

Operating Environment:
Temperature: 24.0 °C
Humidity: 52 % RH
Barometric Pressure: 1012 mbar

EUT Operation:

Compliance test was performed in on mode.

6.3.2 Test Results

Frequency	Level	Modulation	EUT Face	Result / Observations
80MHz-1GHz	3V/m	1kHz, 80%, Amp. Mod.	X Y Z	During test, noise can be heard. After test EUT recovers to normal (A).

Remarks:

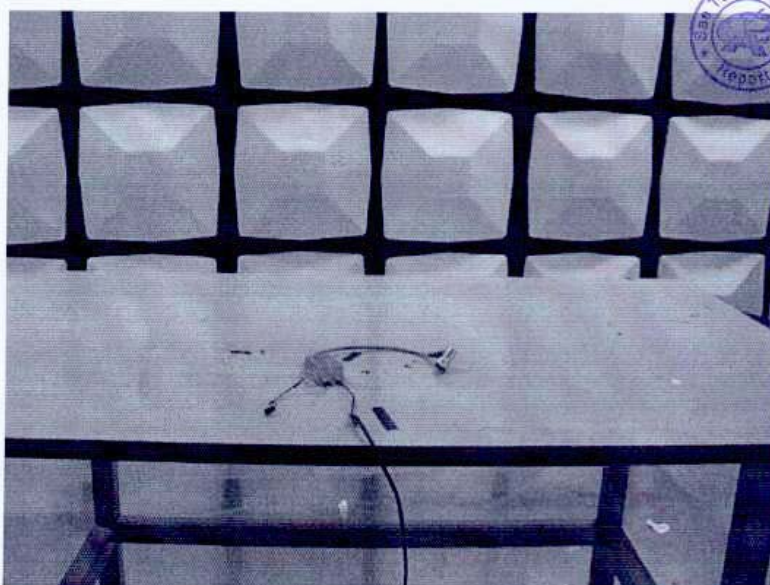
AM : Amplitude Modulation.
PM : Pulse Modulation.
X : EUT as per photograph in section 6.3.3 of this report.
Y : As X, but rotate EUT by 90° clockwise.
Z : As Y, but rotate EUT by 90° vertically.

Results

A: No degradation in the performance of the E.U.T. was observed.



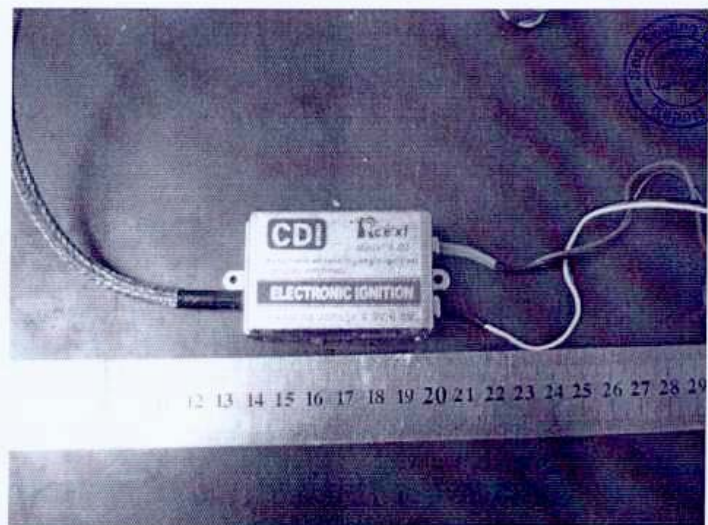
6.3.3 Photographs - Radiated Immunity Test Setup For X-Direction



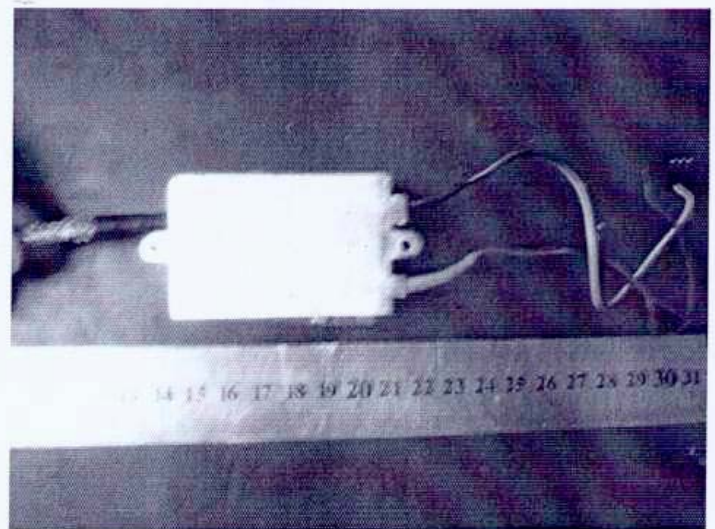


7 Photographs - Constructional Details

7.1 EUT - Front View



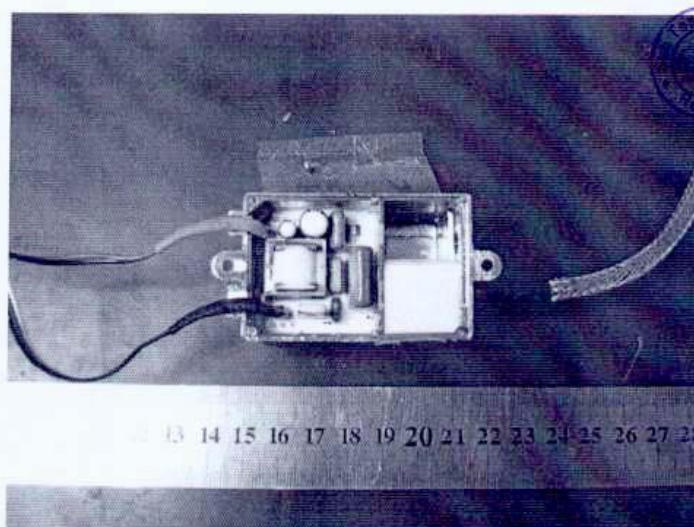
7.2 EUT - Back View



SAE TESTING
Reference No.: CEN0806132



7.3 EUT - Open View

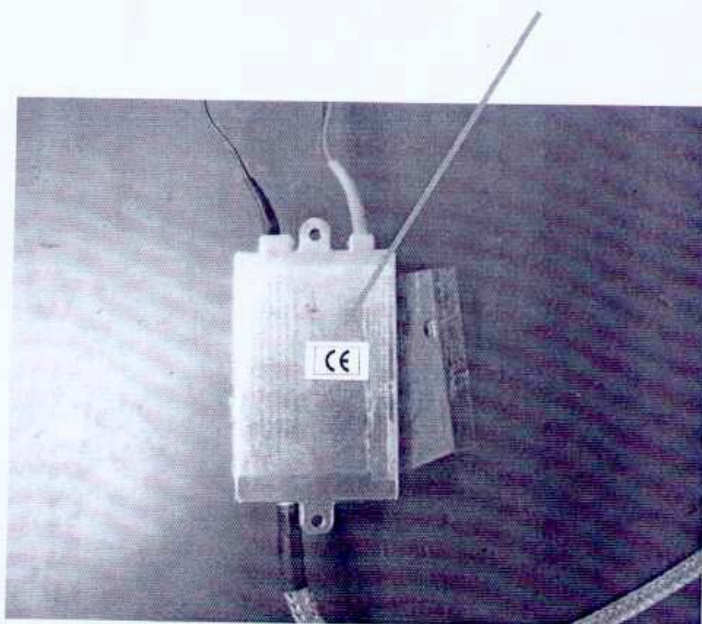




8 CE Label

1. The CE conformity marking must consist of the initials 'CE' taking the following form:
If the CE marking is reduced or enlarged, the proportions given in the above drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
It must have the same height as the initials 'CE'

Proposed Label Location on EUT
EUT Bottom View/proposed CE Mark Location



===== End of Test Report=====