Test report
IEC 61000- 4-2
Electromagnetic compatibility (EMC)-
Part 4-2:Testing and measurment techniques- Electrostatic discharge immunity

Report reference No.…….: PQ8406

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Date of issue……..: 2/7/2005

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Applicant's Name ……...: NRI-IBT Co.

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Test specification

Standard ……..……: IEC 61000-4-2

Non-standard test method.: N/A

Test report form No. ……: IEC 61000-4-2
The test results presented in this report relate only to the object tested.
This report shall not be reproduced except in full without the written approval of the Quality Test Laboratory.

Test item description …..:Electrical Field Alarm

Trade mark ……..: ---

Manufacturer ……..…: NRI-IBT Co.

Model ……..…: EFA5

Serial numbers……...: EFA0010

Summary of testing

The test has been carried out according to IEC 61000-4-2, under the following conditions:

- tested as table-top equipment
- in operating condition:
  - Voltage energized with reference voltage
- Air discharge with 4 kV test voltages
- number of discharges: 10 times (in negative and positive polarity)

Test item particular:

Temperature Limit……..:-5 to 65ºC

Operating Electric Field Treshold…….:2.2 KV/m±10%

Charging Time……..:8-10 Hours

Electric Field Nominal Frequency…….:50/60 Hz

Alarm Type……..:Buzzer,Vibration Alert,Red Flashing Led

Relative Humidity……:Up to 95%

DC Input……:12-16 Vdc Bipolar

Standby Lifetime……..:100 Hours

Alarm Lifetime……:2 Hours

Possible test case verdicts

Test case does not apply to the test object ……: N/A

Test object does meet the requirement……...: Pass

Test object does not meet the requirement…….: Fail

Testing

Date of receipt of test item……..: 2/7/2005

Date(s) of performance of test……..…: 2/7/2005

General remarks:

The following test report consists of 3 basic sections:
Section 1: General information (pages 1 to 3)
Section 2: Test case (page 4)
Section 3:Tables and Figure (Pages 5 to 7)

During the test, a temporary degradation or loss of function or performance is acceptable;

Clause numbers between brackets refer to clauses in IEC 61000-4-2.
Those test conditions are not checked or not applicable to the object are not presented in this report.
Throughout this report the word EUT means equipment under test.
Throughout this report a point is used as the decimal separator.
Throughout this report values with no signs mean positive values.

General product information:
This Equipment is a Electrical Field Alarm which is used for 5KV AC tests.
The manufacturer guarantees that the tested object is manufactured according to its technical specifications.
Quality Test Laboratory checked that this specification adequately represents in shape and dimensions the essential details and the parts of the tested object.
This specification identified by Quality Test Laboratory and a photograghy of its marking plate is attached in page 2 of this report.

IEC 61000-4-2			
cl.	Requirement –Test	Result	Verdict
3	This standrad relates to equipment which may be involved in static electricity discharges due to environmental and instalation conditions,such as low relative humidity,use of low conductivity (artificial – fiber) carpets ,etc.		-
4	**Electrostatic discharge (ESD):** A transfer of electric charge between bodies of different electrostatic potential in proximity or through direct contact.		-
5	**Test level:……..:**	2	-
6	**Test generator**	See table A	-
7	**Test set- up**	See Figure A	-
8	**Test procedure**		-
8.1	Laboratory reference conditions	See table B	Pass
8.2	EUT exercising	------	
8.3	Execution of the test	See table C	-
9	**Test results**		-
	Normal performance within the specification limits.		Pass

Tables

Table A	Test equipment Technical Specifications
Manufacturer Model Serial No. Calibration Date	Haefely PESD 1610 H 306536 10.07.2003
ESD generator	
Air discharge voltage Contact Discharge voltage Contact Discharge Discharge Counter Standard Network Discharge rise time (IEC) Voltage increment Discharge Polarity	0.2 – 16.5 KV 0.2 – 9 KV Single, 1, 2, 5, 10 & 20Hz 1 – 9999 150pF / 330 Ohms 0.7ns – 1.0ns 100 volt steps Positive and Negative

Table B	Climatic condition	
	Requirement	Measured
Ambient Temperature	15°C to 35°C	26 °C
Relative Humidity	30% to 60%	31 %
Atmospheric pressure	86 Kpa to 106 Kpa	------
Electromagnetic conditions	The electromagnetic conditions of the laboratory do not influence the test results.	

Table C	Execution of the test

The tests were conducted with the EUT arrange as Table Top equipment fitted with a 0.8m*1.6m by 1mm (thickness) horizontal coupling plane, the EUT plus coupling planes being mounted on a wooden bench plus insulating support 0.8m above the reference ground plane.

The reference ground plane having dimensions of 1.3m*2.5m by 2 mm (thickness).

The reference ground plane and horizontal coupling plane were electrically connected via a cable with 470 kΩ resistor at each end.
The EUT and all cables were isolated from the horizontal coupling plane by a 0.5mm insulating support.
The discharge return cable of the ESD generator to the ground reference plane being made via a 2m earth cable isolated from the coupling planes by at least 0.1m.

For each type of ESD application (Air, contact, direct & indirect) there was a minimum of 1s between successive discharges.

For direct application of discharge to the EUT only those points and surfaces of the equipment which are accessible to personnel during normal usage, were exposed to ESD, i.e. push buttons and terminal/cover screws.

In the case of indirect application of the discharge, the horizontal coupling and the vertical coupling planes were used. Discharges were applied in each polarity to the horizontal coupling plane centrally to each side of the EUT located 0.1m for the ESD application, as well as to the central edge of the vertical plane comprising of a 0.5m*0.5m aluminum plate, in turn positioned 0.1m from each side of the EUT. The reference ground plane and the vertical coupling plane being electrically connected via 470 kΩ resistors, insulated from the horizontal coupling plate by 0.5mm insulating support.

Discharges were applied to the coupling planes in sufficient different positions that all four faces of the EUT were completely illuminated.

The tests were conducted under the following condition:
The sample EUT energized with reference voltage.
The ground of the EUT connected to the GRP (ground reference plane)

Figure A	Test set - up for electrostatic discharge test