



Test Report

Product Name : PROXIMITY READER SERIES

Model No.: SYRDS1, SYRDL5

Applicant : SYRIS TECHNOLOGY CORP.

Address : 21F-2,NO.12, Sec.1, Taijunggang Rd., Taichung, Taiwan,
R.O.C.

Date of Receipt : Jun. 30, 2003

Date of Test : Jul. 16, 2003

Report No. : 037H016E

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.



Declaration of Conformity

The following products is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The listed standard as below were applied:

The following Equipment:

Product : PROXIMITY READER SERIES
Trade Name : SYRIS
Model Number : SYRDS1, SYRDL5

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). For the evaluation regarding EMC, the following standards were applied:

RFI Emission:

EN 50081-1:1992 Class B : Emission standard
EN 61000-3-2:1995 Class A : Limits for harmonic current emission
Amendment 1:1998
Amendment 2:1998
EN 61000-3-3:1995 : Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity :

EN 50130-4:1995+A1: 1998 : Immunity standard

The following importer/manufacturer is responsible for this declaration:

Company Name : _____
Company Address : _____
Telephone : _____ Facsimile : _____

Person is responsible for marking this declaration:

Name (Full Name)

Position/ Title

Date

Legal Signature



QuieTek Corporation

EMC/Safety Test Laboratory
Accredited by DNV, TUV, Nemko and NVLAP

Date: Jul. 16, 2003
QTK No.: 037H016E



Statement of Conformity

The certifies that the following designated product

Product : PROXIMITY READER SERIES
Trade name : SYRIS
Model Number : SYRDS1, SYRDL5
Company Name : SYRIS TECHNOLOGY CORP.

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Immunity :

EN 50130-4:1995+A1: 1998 : Immunity standard



TEST LABORATORY

Kevin Wang/ Manager

The verification is based on a single evaluation of one sample of above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. Logo.

Test Report Certification

Test Date : Jul. 16, 2003

Report No. : 037H016E



Accredited by TUV, DNV, Nemko and NIST (NVLAP)

Product Name : PROXIMITY READER SERIES
Applicant : SYRIS TECHNOLOGY CORP.
Address : 21F-2,NO.12, Sec.1, Tajunggang Rd., Taichung, Taiwan, R.O.C.
Manufacturer : SYRIS TECHNOLOGY CORP.
Model No. : SYRDS1, SYRDL5
Rated Voltage : DC 12V(Power by Battery)
Trade Name : SYRIS
Measurement Standard : EN 50081-1:1992 Class B
EN 61000-3-2:1995, Amendment 1:1998, Amendment 2:1998
EN 61000-3-3:1995
EN 50130-4:1995+A1: 1998
Measurement Procedure : EN 50081-1:1992, EN 61000-3-2:1995, EN 61000-3-3:1995,
IEC 1000-4-2:1995, IEC 1000-4-3:1995, IEC 1000-4-4:1995,
IEC 1000-4-5:1995, ENV 50141:1993, IEC 1000-4-11:1994
Test Result : Complied

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

Documented By : Carol Tsai
(Carol Tsai)



Tested By : Carter Hsu
(Carter Hsu)



Approved By : Kevin Wang
(Kevin Wang)



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Attachment 1: EUT Test Photographs
 Attachment 2: EUT Detailed Photographs
 Reference : Laboratory of License

1. General Information

1.1. EUT Description

Product Name : PROXIMITY READER SERIES
Trade Name : SYRIS
Model No. : SYRDS1, SYRDL5

Note:

1. This EUT is a PROXIMITY READER SERIES.
2. The variation of model number is for different externals. The circuit of each model is identical.
3. Quietek has verified all construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:
EMI Mode Mode 1: Normal Operation
EMS Mode Mode 1: Normal Operation

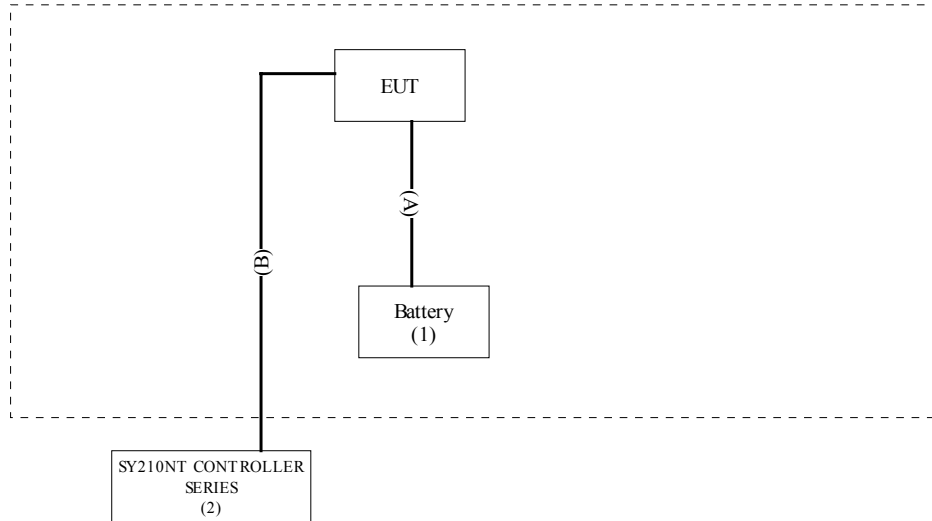
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	Battery	YUASA	36B20R	N/A	--
(2)	SY210NT CONTROLLER SERIES	SY210NT	N/A	N/A	--

	Signal Cable Type	Signal cable Description
A.	Power Line	Non-shielded, 0.5m
B.	Signal Cable	Non-shielded,3.0m

1.3. Configuration of tested System



1.4. EUT Exercise Software

- (1) Setup the EUT and simulators as shown on 1.3.
- (2) Turn on the power of all equipment.
- (3) Verify the model operation before the measurement.

1.5. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	IEC 1000-4-2	15-35	20-35
Humidity (%RH)		30-60	50-55
Barometric pressure (mbar)		860-1060	950-1000
Temperature (°C)	IEC 1000-4-5	15-35	20-35
Humidity (%RH)		10-75	50-65
Barometric pressure (mbar)		860-1060	950-1000
Temperature (°C)	IEC 1000-4-4 IEC 1000-4-11	15-35	20-35
Humidity (%RH)		25-75	50-65
Barometric pressure (mbar)		860-1060	950-1000

Site Description:

August 30, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200347-0



February 23, 1999 Accreditation on DNV
Statement No.: 413-99-LAB11



January 04, 1999 Accreditation on TUV Rheinland
Certificate No.: I9865712-9901



April 28, 2003 Accreditation on Nemko
Certificate No.: ELA 165



Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
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E-Mail: service@quietek.com

2. Conducted Emission

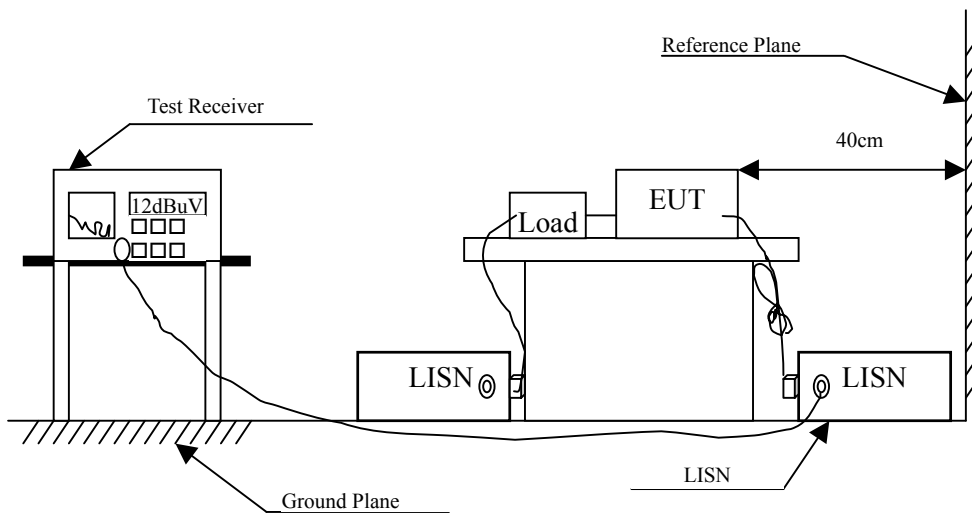
2.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30 / 825442/018	Aug., 2002	
2	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2003	Peripherals
3	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2003	EUT
4	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2003	
5	No.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

EN 50081-1 Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN 50081-1:1992 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to EN 50081-1:1992

2.6. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 13. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

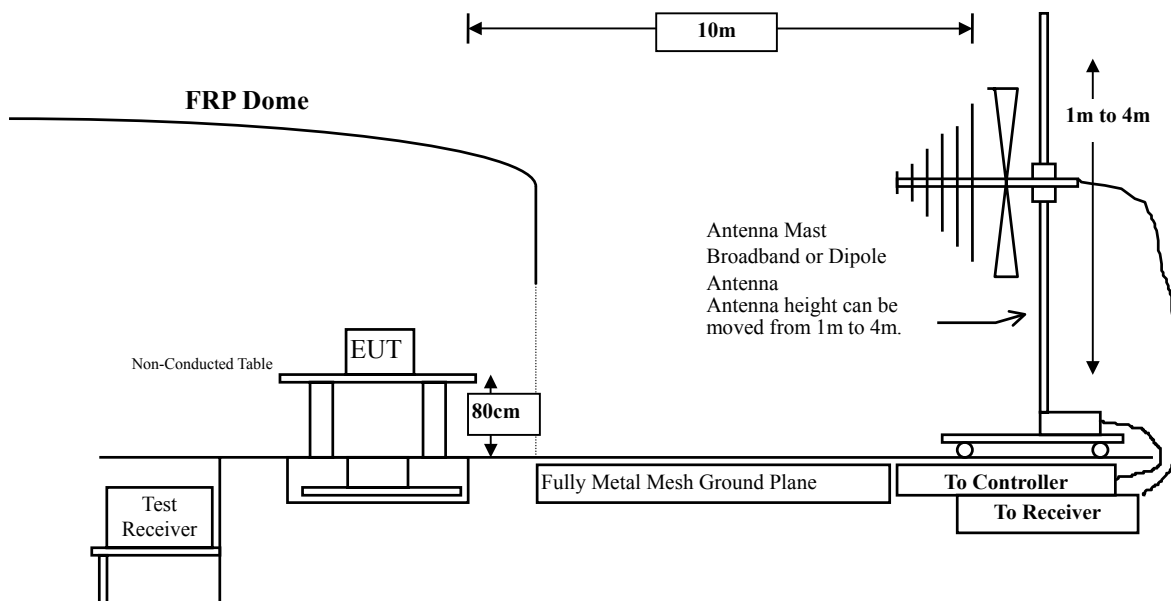
3.1. Test Equipment

The following test equipment are used during the test:

Test Site	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
OATS # 1	Test Receiver	R & S	ESCS 30 / 825442/017	Jan., 2003
	Spectrum Analyzer	Advantest	R3261C / 81720266	N/A
	Pre-Amplifier	HP	8447D / 2944A09276	N/A
	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2002
OATS # 2	X Test Receiver	R & S	ESCS 30 / 836858/023	Jan., 2003
	X Spectrum Analyzer	Advantest	R3261C / 81720471	N/A
	X Pre-Amplifier	Quietek	QTK-AMP / AMP1	N/A
	X Bilog Antenna	Chase	CBL6112B / 2708	Sep., 2002
OATS # 3	Test Receiver	R & S	ESCS 30 / 825442/014	Jun., 2003
	Spectrum Analyzer	Advantest	R3162 / 91700283	N/A
	Pre-Amplifier	Advantest	BB525C / N/A	N/A
	Bilog Antenna	Schaffner	CBL6112B / 2673	Sep., 2002

- Note:
1. All equipments that need to calibrate are with calibration period of 1 year.
 2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup



3.3. Limits

EN 50081-1 Limits				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 230	10	40	10	30
230 – 1000	10	47	10	37

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to EN 50081-1:1992 on radiated measurement.

Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

3.5. Test Specification

According to EN 50081-1:1992

3.6. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 13. The acceptance criterion was met and the EUT passed the test.

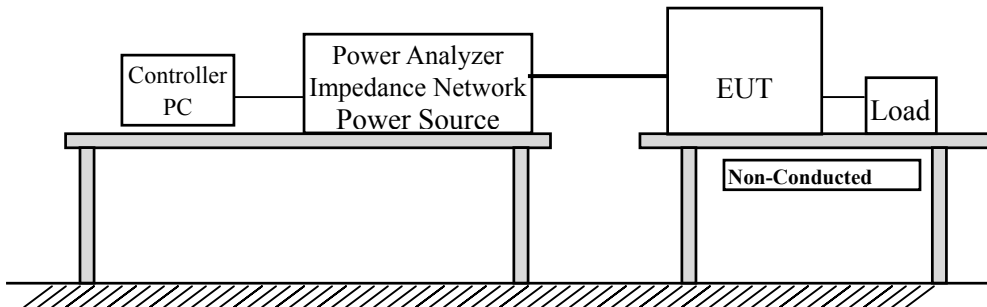
4. Power Harmonics, Voltage Fluctuation and Flicker

4.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Power Frequency Test System	HAEFELY	PHF-555 / 080 419-29	Apr., 2003
2	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

➤Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	8 ≤ n ≤ 40	0.23 * 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 * 15/n		

➤Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

➤Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \leq n \leq 39$ (odd harmonics only)	3

* λ is the circuit power factor

➤Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
$11 \leq n \leq 39$ (odd harmonics only)	$3.85/n$	See limit of Class A

4.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

4.5. Test Specification

According to EN 61000-3-2:1995, Amendment 1:1998, Amendment 2:1998 and EN 61000-3-3:1995

4.6. Test Result

The measurement of the power harmonics, which test at the extremes of EUT's supply range, was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

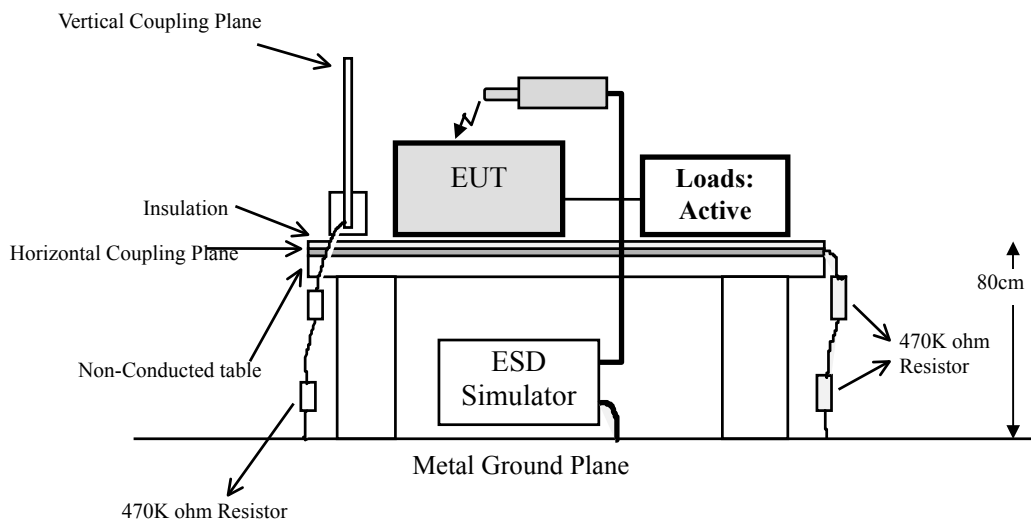
5. Electrostatic Discharge (ESD)

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	EM TEST	EM	UCS 500-M / UCS500M4	Jan., 2003
2	Electrostatic Discharge	EM	P18 / 1198-34	Jan., 2003
3	Horizontal Coupling Plane(HCP)	Quietek	HCP AL50	N/A
4	Vertical Coupling Plane(VCP)	Quietek	VCP AL50	N/A
5	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

5.2. Test Setup



5.3. Limits

Test voltages ¹⁾ : Air discharges	(kV)	8
Contact discharges	(kV)	6
Polarity		+ & -
Number of discharges per point for each voltage and polarity		10
Interval between discharges	(s)	≥ 1
1)The test voltages specified are the open-circuit voltages. The test voltages for the lower severity levels are included because all the lower severity levels must also be satisfied.		

5.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

5.5. Test Specification

According to EN 50130-4:1995+A1: 1998, IEC 1000-4-2:1995

5.6. Test Result

The measurement of the electrostatic discharge was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

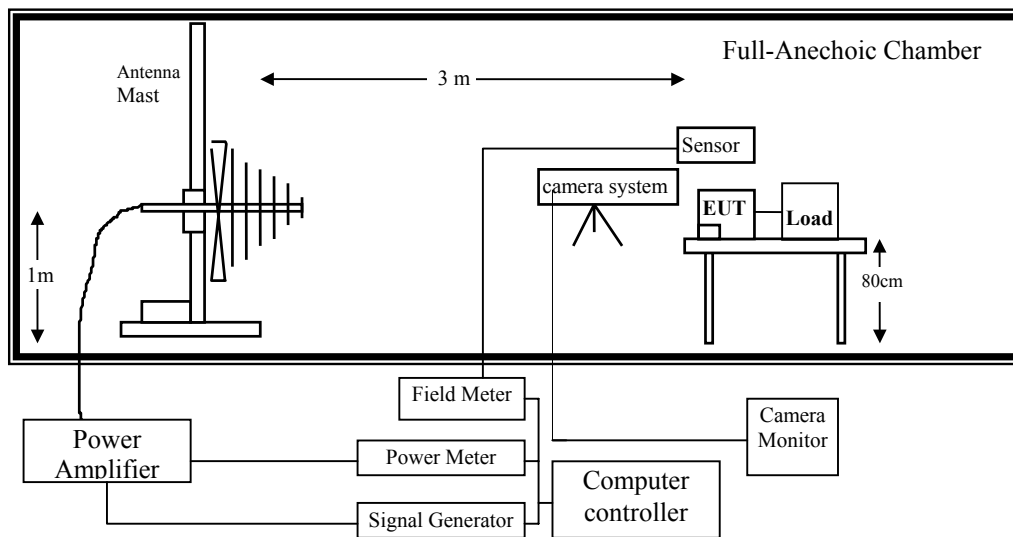
6. Radiated Electromagnetic Fields (RS)

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Signal Generator	R & S	SYM02 / 825454/029	Jan., 2003
2	Power Amplifier	A & R	100W10000M7 / A285000010	N/A
3	RF Power Amplifier	OPHIRRF	5022F / 1075	N/A
4	Bilog Antenna	Chase	CBL6112B / 2452	Sep., 2002
5	Power Meter	R & S	NRVD / 100219	Sep., 2002
6	Directional Coupler	A & R	DC6180 / 22735	Feb., 2003
7	No.4 EMC Fully Chamber			Jul., 2003

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

Frequency range	(MHz)	80 to 1000
Field strength ¹⁾	(V/m)	10
Modulation:		
Amplitude modulation		80%, 1 kHz, sinusoidal
Pulse modulation		1 Hz (0.5 s ON : 0.5 s OFF)
1) The field strength quoted is the RMS value for the continuous wave, before modulation.		

6.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters. Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

6.5. Test Specification

According to EN 50130-4:1995+A1: 1998, IEC 1000-4-3:1995

6.6. Test Result

The measurement of the radiated susceptibility was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

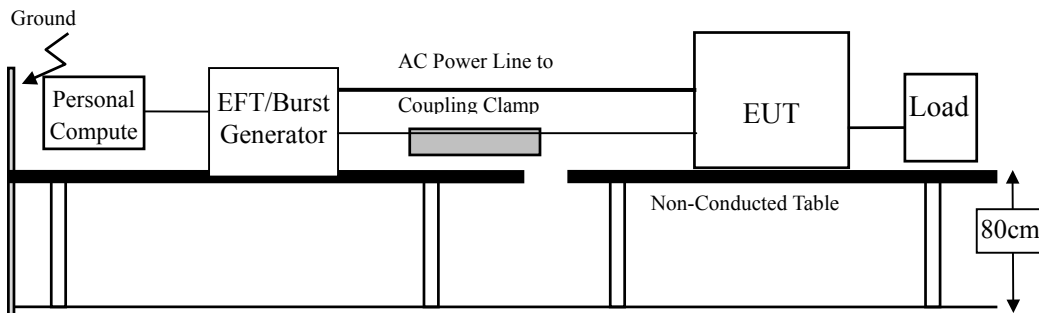
7. Fast Transient Bursts (EFT/B)

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	EM TEST	EM	UCS 500-M / UCS500M4	Jan., 2003
2	Clamp	HAEFELY	093 506.1 / 083 593-23	Jan., 2003
3	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

Test voltages ¹⁾ : AC mains supply lines	(kV)	2
Other supply/signal lines	(kV)	1
Polarity		+ & -
Number of applications for each voltage and polarity		1
Duration per application	(min)	1+0.2 -0

1)The test voltages specified are the open-circuit voltages. The test voltages for the lower severity levels are included because all the lower severity levels must also be satisfied.

7.4. Test Procedure

The EUT and load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides.

For Input and Output AC Power or DC Input and DC Output Power Ports :

The EUT is connected to the power mains through a coupling device that directly couples the EFT interference signal.

Each of the Line and Neutral conductor is impressed with burst noise for 1 min.

The length of power cord between the coupling device and the EUT shall be 1m.

For Functional Earth Port :

The EUT is connected to the power mains through a coupling device that directly couples the EFT interference signal.

The protective earth line (PE) is impressed with burst noise for 1 min.

The length of power cord between the coupling device and the EUT shall be 1m.

For Signal Lines and Control Lines test:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1min.

7.5. Test Specification

According to EN 50130-4:1995+A1: 1998, IEC 1000-4-4:1995

7.6. Test Result

The measurement of the Electrical Fast Transient/Burst was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

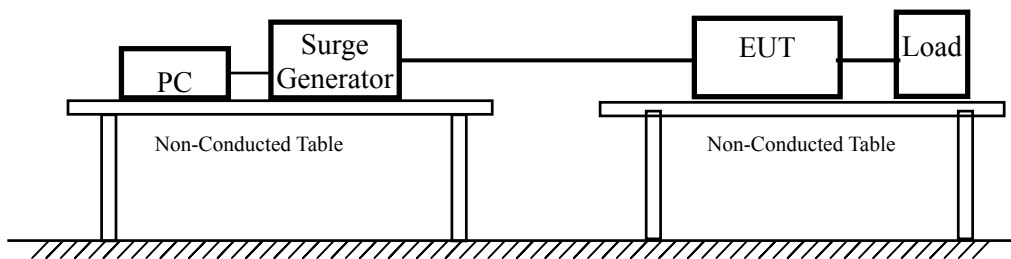
8. Slow High Energy Voltage Surge

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	EM TEST	EM	UCS 500-M / UCS500M4	Jan., 2003
2	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

Test voltages ¹⁾ : AC mains supply lines:		
-line-to-line	(kV)	1
-line-to-ground ²⁾	(kV)	2
Other supply/signal lines:		
-line-to-ground ³⁾	(kV)	1
Polarity		+ & -
Minimum number of surges at each polarity, voltage, coupling mode and line:		
-A.C. mains supply lines		20 ⁴⁾
-other supply/signal lines		5

1)The test voltages specified are the open-circuit voltages. The test voltages for the lower severity levels are included because all the lower severity levels must also be satisfied.

2) via a 10Ω series resistor.

3) via a 40Ω series resistor.

4) 5 at each zero-crossing point and at the maximum and minimum points on the mains voltage wave.

8.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0° , 90° , 180° , 270° and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

8.5. Test Specification

According to EN 50130-4: 1995+A1: 1998, IEC 1000-4-5:1995

8.6. Test Result

The measurement of the Surge was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

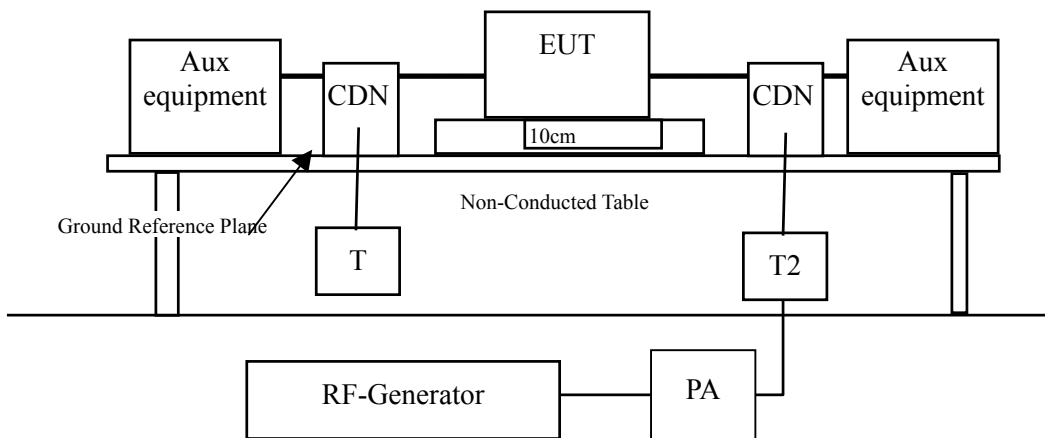
9. Conducted Disturbances Induced By Electromagnetic Fields Susceptibility (CS)

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Signal Generator	R & S	SYM01 / 10065	Jan., 2003
2	Power Amplifier	A & R	150A220 / 23076	N/A
3	Power Meter	HP	EPM-4418A / GB37482040	Feb., 2003
4	Power Sensor	Agilent	8482A / MY41091031	Aug., 2002
5	Directional Coupler	A & R	DC2600 / 23325	Feb., 2003
6	CDN	Lüthi	CDN L-801 M1 / 2047	Jun., 2003
7	CDN	Lüthi	CDN L-801 M2/M3 / 2043	Jun., 2003
8	FIXED PAD	TRILITHIC	HFP-525-3/6-NF/NF / N/A	N/A
9	EM Clamp	Lüthi	EM101 / 3552C	Apr., 2003
10	No.5 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

Test voltages ¹⁾ :	(MHz)	0.15 to 100
Voltage level (emf) ¹⁾ U ₀	(dB μV) {V}	140 {10}
Modulation: Amplitude modulation ²⁾ Pulse modulation ²⁾		80%, 1 kHz, sinusoidal 1 Hz (0.5 s ON : 0.5 s OFF)
1) The voltage level quoted is the open-circuit RMS value for the continuous wave, before modulation.		

9.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.

For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

9.5. Test Specification

According to EN 50130-4:1995+A1: 1998, ENV 50141:1993

9.6. Test Result

The measurement of the Conducted Susceptibility was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

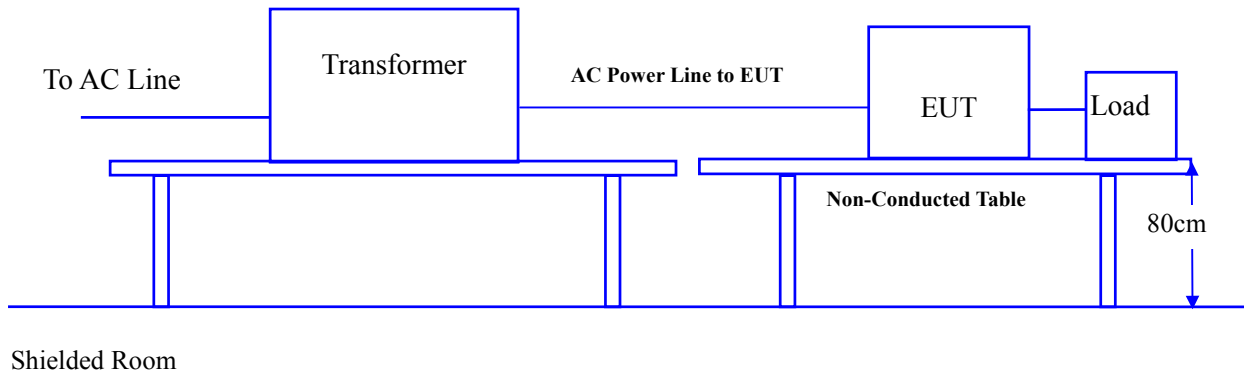
10. Mains Supply Voltage Variations

10.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Power Transformer	SLIDAC	TL-3440 S/N: 114881	N/A
2	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

10.2. Test Setup



10.3. Limits

Supply voltage max (U_{max})	$U_{nom}^{1)} + 10\%$
Supply voltage min (U_{min})	$U_{nom}^{1)} - 15\%$
<p>1) U_{nom} = Nominal mains voltage. Where provision is made to adapt the equipment to suit a number of nominal supply voltages (e.g. by transformer tap changing), the above conditioning severity shall be applied for each nominal voltage, with the equipment suitably adapted. For equipment which is claimed to be suitable for a range of nominal mains voltages (e.g. 220/240 V) without adaptation, $U_{max} = (\text{Maximum } U_{nom}) + 10\%$, and $U_{min} = (\text{Maximum } U_{nom}) - 15\%$. In any case the range of U_{nom} must include the European nominal mains voltage of 230V.</p>	

10.4. Test Procedure

Connect the specimen to suitable power supply, monitoring and loading equipment, The specimen shall be in its operating condition.

Monitor the specimen during the conditioning to detect any change in status. When temperature stability has been obtained, at each of the supply conditions, subject the specimen to the functional test.

10.5. Test Specification

According to EN 50130-4: 1995+A1: 1998

10.6. Test Results

The measurement of the Voltage Mains supply voltage variations was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

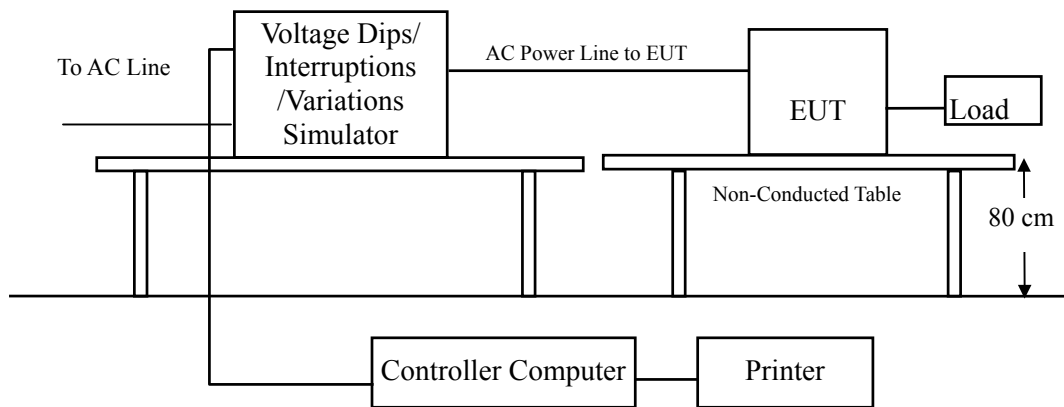
11. Main Supply Voltage Dips and Short Interruptions

11.1. Test Equipment

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	EM TEST	EM	UCS 500-M / UCS500M4	Jan., 2003
2	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year

11.2. Test Setup



11.3. Limits

Voltage reduction (%)	60	100
Duration of reduction (No. of periods) (i.e. cycles of the voltage wave)	10	5
Number of reductions at each duration	3	3
Interval between reductions (s)	≥ 10	≥ 10

11.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 500ms, for 95% voltage dip of supplied voltage and duration 10ms with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 5000ms with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0° , 45° , 90° , 135° , 180° , 225° , 270° , 315° of the voltage.

11.5. Test Specification

According to EN 50130-4:1995+A1: 1998, IEC 1000-4-11:1994

11.6. Test Result

The measurement of the Voltage Dips and Interruption was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

12. EMC Reduction Method During Compliance Testing

No modification was made during testing.

13. Test Result

The test results in the emission and the immunity were performed according to the requirements of measurement standard and process. Quietek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission is listed as below.

All the tests were carried out with the EUT in normal operation, which was defined as:

EMI Mode: Mode 1: Normal Operation

EMS Mode: Mode 1: Normal Operation

13.1. Test Data of Conducted Emission

Owing to the DC operation of EUT, this test item is not performed.

13.2. Test Data of Radiated Emission

Product : PROXIMITY READER SERIES
 Test Item : Radiated Emission
 Test Site : No.2 OATS
 Test Mode : Mode 1: Normal Operation

Freq.	Cable Loss	Probe Factor	PreAMP Reading	Emission Level	Margin	Limit
MHz	dB	dB/m	dB	dBuV	dB	dBuV/m

Horizontal

67.580	1.51	6.19	0.00	6.98	14.68	15.32	30.00
149.310	2.30	10.64	0.00	2.89	15.83	14.17	30.00
243.325	3.20	11.82	0.00	6.38	21.40	15.60	37.00
298.625	3.74	13.33	0.00	4.19	21.26	15.74	37.00
592.000	5.27	18.65	0.00	0.27	24.19	12.81	37.00
* 699.250	5.83	19.19	0.00	1.06	26.08	10.92	37.00

Vertical

44.235	1.29	9.96	0.00	12.67	23.92	6.08	30.00
66.365	1.50	5.83	0.00	13.61	20.94	9.06	30.00
127.200	2.08	11.87	0.00	12.63	26.58	3.42	30.00
182.500	2.62	8.96	0.00	13.12	24.70	5.30	30.00
* 199.080	2.78	9.07	0.00	16.60	28.46	1.54	30.00
210.145	2.89	9.35	0.00	12.41	24.64	5.36	30.00
243.330	3.20	11.78	0.00	8.44	23.42	13.58	37.00
298.625	3.74	13.54	0.00	11.53	28.80	8.20	37.00
337.335	3.95	14.65	0.00	11.28	29.88	7.12	37.00

Note:

1. All Readings Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

13.3. Test Data of Power Harmonics, Voltage Fluctuation and Flicker

Owing to the DC Operation of EUT, this item is not performed

13.4. Test Data of Electrostatic Discharge

Product : PROXIMITY READER SERIES
 Test Item : Electrostatic Discharge
 Test Mode : Mode 1: Normal Operation

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8kV	B	A	Pass
	10	-8kV	B	A	Pass
Contact Discharge	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass
Indirect Discharge (HCP)	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass
Indirect Discharge (VCP Front)	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass
Indirect Discharge (VCP Left)	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass
Indirect Discharge (VCP Back)	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass
Indirect Discharge (VCP Right)	10	+6kV	B	A	Pass
	10	-6kV	B	A	Pass

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ____ kV.
 - No false alarms or other malfunctions were observed during or after the test.

13.5. Test Data of Radiated Electromagnetic Fields

Product : PROXIMITY READER SERIES
 Test Item : Radiated Susceptibility
 Test Mode : Mode 1: Normal Operation
 Modulation : Amplitude Modulation

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0	H	10	B	A	Pass
80-1000	0	V	10	B	A	Pass
80-1000	90	H	10	B	A	Pass
80-1000	90	V	10	B	A	Pass
80-1000	180	H	10	B	A	Pass
80-1000	180	V	10	B	A	Pass
80-1000	270	H	10	B	A	Pass
80-1000	270	V	10	B	A	Pass

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - There was no observable degradation in performance.
 - EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____ MHz.
- No false alarms or other malfunctions were observed during or after the test.

Product : PROXIMITY READER SERIES
 Test Item : Radiated Susceptibility
 Test Mode : Mode 1: Normal Operation
 Modulation : Pulse Modulation

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0	H	10	B	A	Pass
80-1000	0	V	10	B	A	Pass
80-1000	90	H	10	B	A	Pass
80-1000	90	V	10	B	A	Pass
80-1000	180	H	10	B	A	Pass
80-1000	180	V	10	B	A	Pass
80-1000	270	H	10	B	A	Pass
80-1000	270	V	10	B	A	Pass

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - There was no observable degradation in performance.
 - EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____MHz.
 - No false alarms or other malfunctions were observed during or after the test.

13.6. Test Data of Electrical Fast Transient Bursts

Product : PROXIMITY READER SERIES
 Test Item : Electrical Fast Transient
 Test Mode : Mode 1: Normal Operation

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L	±	1kV	60	Direct	B	A	Pass
PE	±	1kV	60	Direct	B	A	Pass
L+ PE	±	1kV	60	Direct	B	A	Pass
Signal Cable	±	1kV	60	Clamp	B	A	Pass

- Meet criteria A : Operate as intended during and after the test
 Meet criteria B : Operate as intended after the test
 Meet criteria C : Loss/Error of function
 Additional Information
 EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
 No false alarms or other malfunctions were observed during or after the test.

13.7. Test Data of Slow High Energy Voltage Surge

Product : PROXIMITY READER SERIES
 Test Item : Surge
 Test Mode : Mode 1: Normal Operation

Inject Line	Polarity	Angle	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-PE	+/-	0	1kV	60	Direct	B	A	Pass
L- PE	+/-	90	1kV	60	Direct	B	A	Pass
L- PE	+/-	180	1kV	60	Direct	B	A	Pass
L- PE	+/-	270	1kV	60	Direct	B	A	Pass

- Meet criteria A : Operate as intended during and after the test
- Meet criteria B : Operate as intended after the test
- Meet criteria C : Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
- No false alarms or other malfunctions were observed during or after the test.

13.8. Test Data of Conducted Disturbances Induced By Electromagnetic Fields

Owing to the DC operation of EUT, this test item is not performed.

13.9. Test Data of Main Supply Variations Test Results

Owing to the DC operation of EUT, this test item is not performed.

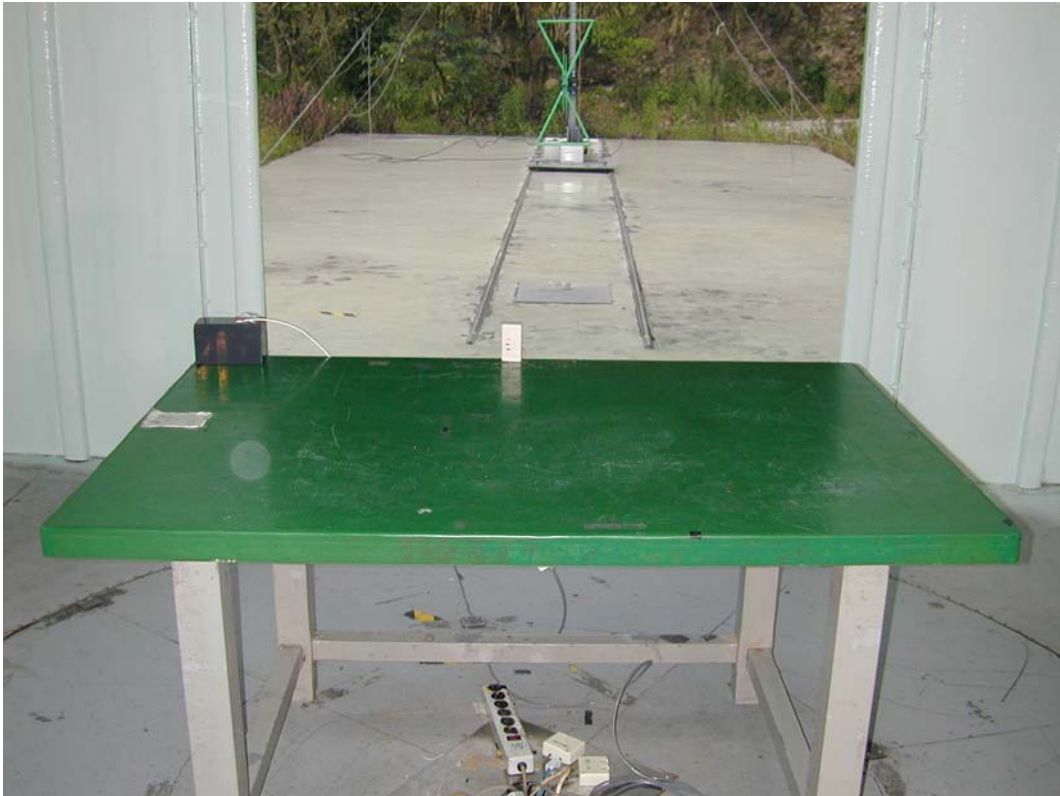
13.10. Test Data of Main Supply Voltage Dips and Shot Interruptions

Owing to the DC operation of EUT, this test item is not performed.

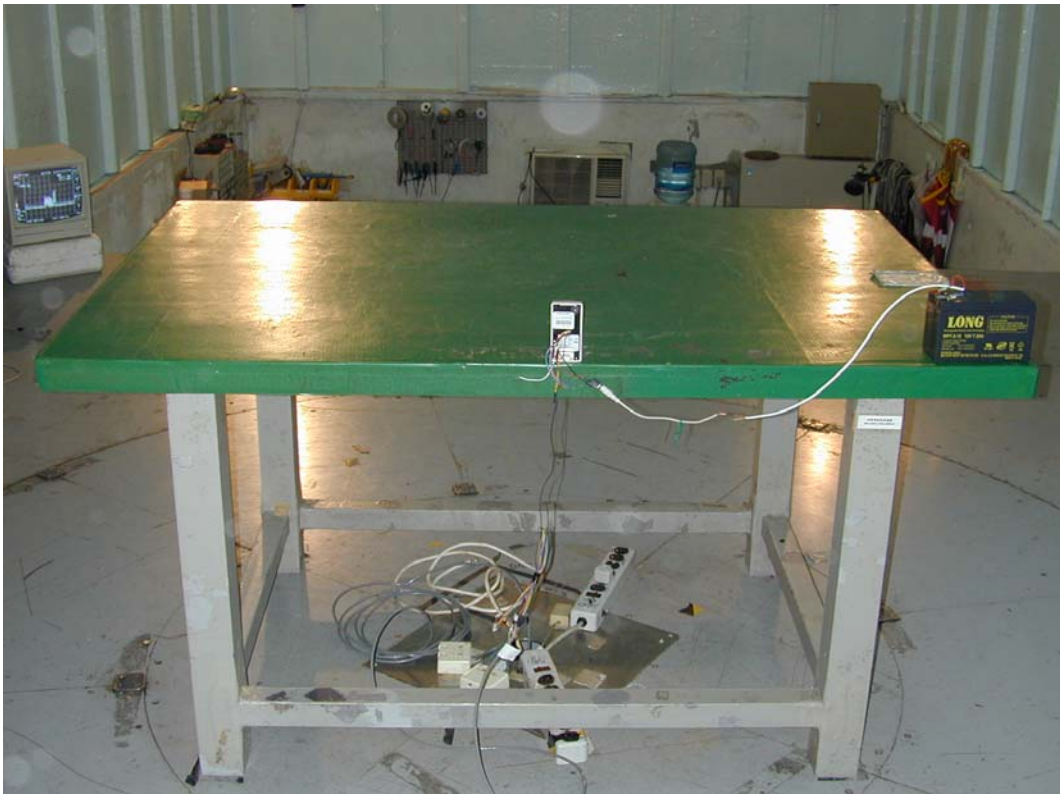
Attachment 1 : EUT Test Photographs

Attachment 1 : EUT Test Photographs

Front View of Radiated Test



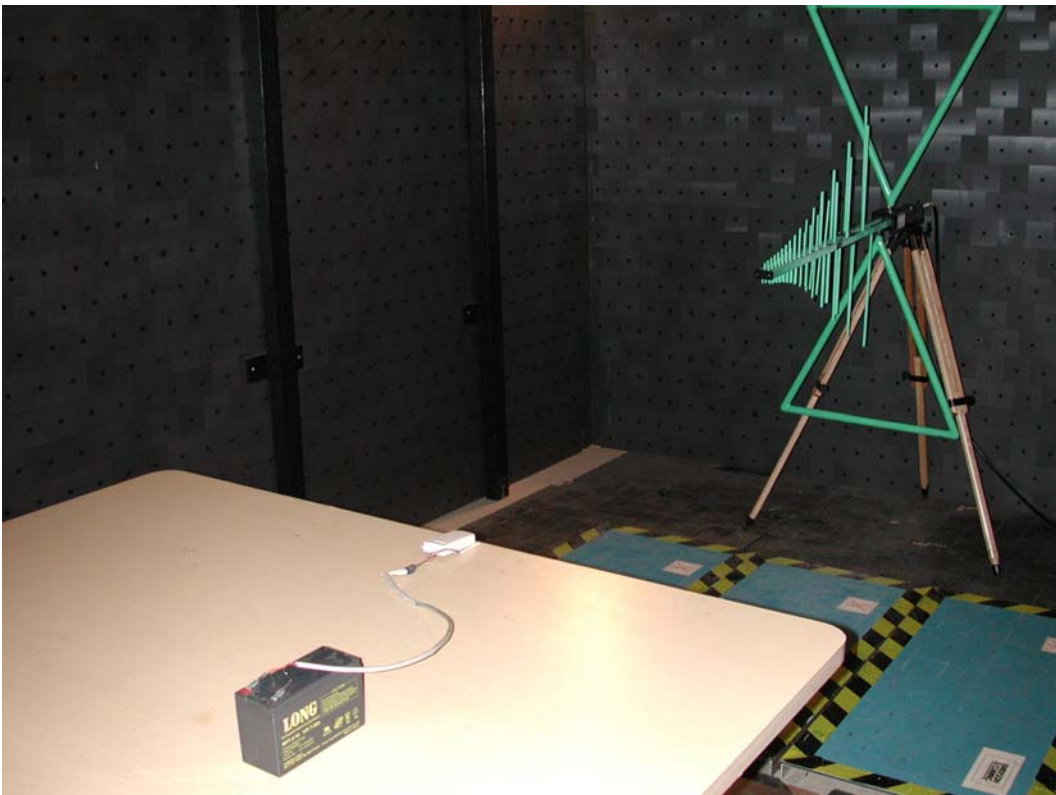
Back View of Radiated Test



ESD Test Setup



RS Test Setup



EFT/B Test Setup



EFT/B Test Setup – Clamp (Signal Cable)



Surge Test Setup



EFT/B Test Setup – Clamp (Signal Cable)



Surge Test Setup



Attachment 2 : EUT Detailed Photographs

Attachment 2 : EUT Detailed Photographs

(1) EUT Photo



(2) EUT Photo



Reference : Laboratory of License

**Nemko Laboratory
Authorisation
Aut. No.: ELA 165**

EMC Laboratory: **Quietek Corporation**
No. 75-2, Wang-Yeh Valley,
Yung-Hsing, Chiung-Lin, Hsin-Chu,
Hsin-Chu County, Taiwan R.O.C.

Scope of
Authorization: **All standards for EMC and radio transmission that are listed
on the accompanying page.**

Nemko has assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA -10. During the visit by the Nemko representative it was found that the Laboratory is capable of performing tests within the Scope of the Authorisation.

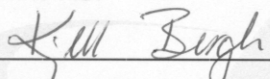
Accordingly, Nemko will normally accept test results from the laboratory on a partial or complete basis for certification of the products.

In order to maintain the Authorisation, the information given in the pertinent NLA-10 must be carefully followed. Nemko is to be promptly notified about any changes in the situation at the Laboratory, which may affect the basis for this Authorisation. The Authorisation may be withdrawn at any time if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31. December 2005.

Oslo, 2003-04-28

For Nemko AS:



Kjell Bergh, Nemko Group EMC Co-ordinator

Scope of authorisation

Generic and product-family standards

EMC		
<p><i>UPS – Uninterruptable power supplies</i> EN 50091-2:1995 (doc=exp)</p>	<p><i>ISM equipment, emission</i> EN 55011:1998 + A1 :99 (doc=exp) + A2:2002 (doc=1.10.05) CISPR 11:97 + A1 :99 + A2 :02</p>	<p><i>Broadcast receivers – emission</i> EN 55013 :2001 (doc=1.9.04) CISPR 13 :2001 (mod) EN 55013:1990 + A12:1994 + A13:1996 + A14 :1999 (doc=exp) CISPR 13:1975 + A1:1983 mod.</p>
<p><i>Household appliances – emission</i> EN 55014-1 :2000 (doc=1.8.03) + A1 :2001 (doc=1.10.04) + A2 :2002 (doc=1.10.05) CISPR 14-1 :2000 + A1 :2001 + A2 :2002 EN 55014-1:1993 + A1:1997 + A2 :1999 (doc=exp) CISPR 14:1993 + A1:1996 + A2 :1998</p>	<p><i>Household appliances - immunity</i> EN 55014-2:1997 (doc=exp) + A1:2001 (doc=1.12.04) CISPR 14-2:1997 + A1 :2001</p>	<p><i>Electrical lighting – emission</i> EN 55015 :2000 (doc=1.8.03) + A1 :2001 (doc=1.12.04) + A2 :2002 (doc=1.10.05) CISPR 15 :2000 + A1 :2000 + A2 :2002 EN 55015:1996 + A1:97 + A2 :99 (doc=exp) CISPR 15:96 + A1:97 + A2 :98</p>
<p><i>ITE - emission</i> EN 55022:1998 + A1:2000 (doc=1.8.03) + A2:2002 (doc=not harmonised yet) CISPR 22:1997 + A1:2000 + A2:2002 EN 55022:1994 + A1:1995 + A2:1997 (doc=exp) CISPR 22:1993 + A1:1995 + A2:1996</p>	<p><i>ITE – immunity</i> EN 55024:1998 (doc=exp) + A1 :2001 (doc=1.10.04) + A2 :2002 (doc=not harmonised yet) CISPR 24:1997 + A1 :2001 + A2 :2002</p>	<p><i>Harmonics</i> EN 61000-3-2 :2000 (doc=1.1.04) IEC 61000-3-2 :2000 (mod) + A1 :2001 EN 61000-3-2:1995 + A1:1998 + A2:1998 (doc=exp) + A14 :2000 (doc=1.1.04) IEC 61000-3-2:1995 + A1:1997 + A2:1998</p>
<p><i>Flicker</i> EN 61000-3-3 :1995 (doc=exp) + A1 :2001 (doc=1.5.04) IEC 61000-3-3 :1994 + A1 :2001</p>	<p><i>Generic immunity - light</i> EN 61000-6-1:2001 (doc=1.7.04) IEC 61000-6-1:1997 (mod) EN 50082-1 :1997 (doc=exp)</p>	<p><i>Generic immunity – Industrial</i> EN 61000-6-2:2001 (doc=1.7.04) IEC 61000-6-2:1999 (mod) EN 61000-6-2:1999 (doc=exp) IEC 61000-6-2:1999</p>
<p><i>Generic emission – light</i> EN 61000-6-3 :2001 (doc=1.7.04) IEC 61000-6-3 :1996 (mod) EN 50081-1:1992 (doc=exp)</p>	<p><i>Generic emission - industry</i> EN 61000-6-4 :2001 (doc=1.7.04) IEC 61000-6-4:1997 (mod) EN 50081-2:1993 (doc=exp)</p>	<p><i>Laboratory equipment</i> EN 61326 :1997 + A1 :98 (doc=exp) + A2 :01 (doc=1.4.04) IEC 61326 :1997 + A1 :98 + A2 :00</p>
<p><i>Electrical lighting – immunity</i> EN 61547 :1995 (doc=exp) + A1 :2000 (doc=1.11.03) IEC 61547 :1995 + A1 :2000</p>	<p><i>Professional AV – emission</i> EN 55103-1:1996 (doc=exp)</p>	<p><i>Professional AV - immunity</i> EN 55103-2:1996 (doc=exp)</p>

EMC		
<i>Broadcast receives - immunity</i> EN 55020:2002 (doc=1.4.05) CISPR 20:2002 A1:2002 to CISPR 20:2002 (not harm) EN 55020:1994 + A11:96 + A12 :99 + A13 :99 + A14 :99 (doc=exp)		

R&TTE		
<i>Generic Art. 3.1.b</i> EN 300 339 :1998 (doc=exp)	<i>SRD 25 – 1000 MHz, Art. 3.2</i> EN 300 220-1:2000 EN 300 220-2:2000 EN 300 220-3 :2000 (doc=exp)	ETS 300 328:1996 + A1:97 EN 300 328-1:2000 EN 300 328-2:2000
EN 300 440-1 :2001 EN 300 440-2 :2001	ETS 300 683 :1997 EN 301 489-01:2000 EN 301 489-03 :2000 EN 301 489-17 :2000	ETS 300 683 :1997 EN 301 489-03 :2000 EN 301 489-17 :2000

<i>Medical</i>		
<i>Collateral EMC standard for Medical Devices</i> EN 60601-1-2:1993 (doc=exp) IEC 60601-1-2:1993 EN 60601-1-2:2001 (doc=1.11.2004) IEC 60601-1-2:2001		

<i>Basic standards</i>		
EN 61000-4-2:1995 + A1:98 IEC 61000-4-2:1995 + A1:98 (EN 60801-1:1993 IEC 801.2:1991 IEC 801.2:1984)	EN 61000-4-3:1996 + A1:98 IEC 61000-4-3:1995 + A1:98 (IEC 801.3:1984 ENV 50140:1993 + ENV 50204:1995)	EN 61000-4-4:1995 IEC 61000-4-4:1995 (IEC 801.4:1990)
EN 61000-4-5:1995 IEC 61000-4-5:1995 (ENV 50142:1994)	EN 61000-4-6:1996 IEC 61000-4-6:1996 (ENV 50141:1993)	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994	CISPR 16-1 :1999 + A1 :2002 CISPR 16-2 :1996 + A1 :1999 + A2 :2002 CISPR 16-3 :2000 + A1 :2002 CISPR 16-4 :2002	EN 55020:2002 CISPR 20:2002 EN 55020:1994 + A11:96 + A12 :99 + A13 :99 + A14 :99
ANSI C63.4		