

Anbotek[®]

Product Safety

CERTIFICATE

Of Conformity

EC Council Directive 2004/108/EC
Electromagnetic Compatibility

Registration No.: AT0807686E

Report No.: 200807746E

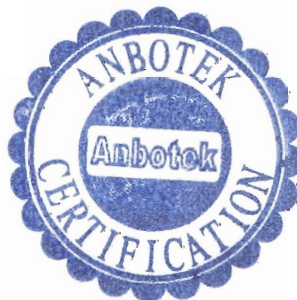
Applicant : Shenzhen MinDe Electronics Technology Ltd.
Room 2304, Overseas Chinese Scholars Venture Building,
South District of High-Tech Industrial Park, Shenzhen, P.R.
China

Product : Barcode Laser Scanner

Identification : **Model No.** : MD 2230 series, MD 2250 series
Trade Mark : MINDEO
Rating : DC 5V Connect to PC

Standard : EN 55022: 2006
EN 55024: 1998+A1: 2001+A2: 2003

The certificate of conformity is based on an evaluation of a sample of the above-mentioned product. Technical report and documentation are at the applicant's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex III of Council Directive 2004/108/EC, in its latest amended version, referred to EMC Directive. The certificate does not imply assessment of the production and does not permit the use of Lab's logo. The applicant of the certificate is authorized to use this certificate in connection with EC declaration of conformity to Article 10.1 of the Directive.



Certified by

Jul. 31, 2008
Date


Raymond Lee
For Vice Chief Executives



The CE Marking may only be used if all relevant and effective EC Directives are complied with



Anbotek Compliance Laboratory Limited

2/F, Langfeng Building, Kefa Road North, Hi-tech Industrial Park, Nanshan District, Shenzhen 518057, China
[Http://www.anbotek.com](http://www.anbotek.com)

Tel: (86)755-26014771
Fax: (86)755-26014720
Email: service@anbotek.com

EMC TEST REPORT
for
Shenzhen MinDe Electronics Technology Ltd.

Barcode Laser Scanner
Model No.:MD 2230 series, MD 2250 series

Prepared for : Shenzhen MinDe Electronics Technology Ltd.
Address : Room 2304, Overseas Chinese Scholars Venture Building, South
District of High-Tech Industrial Park, Shenzhen, P.R. China
Tel: (86) 755-86141288
Fax: (86) 755-86022683

Prepared by : Anbotek Compliance Laboratory Limited
Address : 2/F, Langfeng Building, Kefa Road North, Hi-tech Industrial Park,
Nanshan District, Shenzhen 518057, China
Tel: (86) 755-26014771
Fax: (86) 755-26014720

Report Number : 200807746E
Date of Test : Jul. 28~30, 2008
Date of Report : Aug. 01, 2008

TABLE OF CONTENT

Description	Page
Test Report Verification	
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT).....	4
1.2. Description of Test Facility	5
1.3. Measurement Uncertainty	5
2. MEASURING DEVICE AND TEST EQUIPMENT.....	6
2.1. For Radiated Emission Measurement	6
2.2. For Electrostatic Discharge Measurement.....	6
2.3. RF Strength Susceptibility Measurement	6
3. RADIATED EMISSION TEST	7
3.1. Block Diagram of Test.....	7
3.2. Measuring Standard	7
3.3. EUT Configuration on Test	8
3.4. Operating Condition of EUT	8
3.5. Test Procedure	8
3.6. Measuring Results	8
4. ELECTROSTATIC DISCHARGE TEST.....	9
4.1. Block Diagram of Test Setup	9
4.2. Measuring Standard	9
4.3. Severity Levels and Performance Criterion.....	9
4.4. EUT Configuration on Test	10
4.5. Operating Condition of EUT	10
4.6. Test Procedure	10
4.7. Measuring Results	10
5. RF FIELD STRENGTH SUSCEPTIBILITY TEST	12
5.1. Block Diagram of Test.....	12
5.2. Measuring Standard	12
5.3. Severity Levels and Performance Criterion.....	13
5.4. EUT Configuration on Test	13
5.5. Operating Condition of EUT	13
5.6. Test Procedure	13
5.7. Measuring Results	13
6. PHOTOGRAPHS	15
6.1. Photo of Radiated Emission Measurement.....	15
6.2. Photo of Electrostatic Discharge Test.....	15
6.3. Photo of RF Field Strength susceptibility Test.....	15
APPENDIX I (Radiated Emission Test Curves) (2 pages)	
APPENDIX II (Photos of the EUT) (3 pages)	

TEST REPORT VERIFICATION

Applicant : Shenzhen MinDe Electronics Technology Ltd.
Manufacturer : Shenzhen MinDe Electronics Technology Ltd.
EUT Description : Barcode Laser Scanner
Model No. : MD 2230 series, MD 2250 series
Trade Mark : MINDEO
Rating : DC 5V Connect to PC

Measurement Procedure Used:

EN 55022:2006
EN 55024: 1998+A1: 2001+A2: 2003
(IEC 61000-4-2: 2001, IEC 61000-4-3: 2006)

The device described above is tested by Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN55022 and EN55024 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Test Date: Jul. 28~30, 2008



Prepared by :

(Engineer)



Reviewer :

(Project Manager)



Approved & Authorized Signer :

(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	: Barcode Laser Scanner
Model Number	: MD 2230 series, MD 2250 series (Note: All samples are the same except the model number & shape of appliances, so we prepare “MD 2250Series” for EMC test only.)
Test Power Supply	: DC 5V Connect to PC
Applicant	: Shenzhen MinDe Electronics Technology Ltd.
Address	: Room 2304, Overseas Chinese Scholars Venture Building, South District of High-Tech Industrial Park, Shenzhen, P.R. China
Manufacturer	: Shenzhen MinDe Electronics Technology Ltd.
Address	: Room 2304, Overseas Chinese Scholars Venture Building, South District of High-Tech Industrial Park, Shenzhen, P.R. China
Date of Sample received	: Jul. 24, 2008
Date of Test	: Jul. 28~ 30, 2008

1.2. Description of Test Facility

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

VCCI-Registration No.: R-2197 and C-2383

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (VCCI) Voluntary Control Council for Interference by Information Technology Equipment. The acceptance letter from the VCCI is maintained in our files. Registration R-2197 and C-2383, September 29, 2005.

FCC-Registration No.: 556682

SGS-CSTC Standards Technical Services 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 556682, August 04, 2005.

IC-Registration No.: 6002

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 6002, August 25, 2005.

Test Location

All Emissions tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. at No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China

1.3. Measurement Uncertainty

Radiation Uncertainty : $U_r = \pm 4.26\text{dB}$

Conduction Uncertainty : $U_c = \pm 2.66\text{dB}$

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCS30	100038	Nov.12, 2007	1 Year
2.	Artificial Mains	Rohde & Schwarz	ESH2-Z5	100028	Nov.12, 2007	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESHSZ2	100044	Nov.12, 2007	1 Year
4.	CE Variac	GZ Debao Factory	TS/DGC ₂ -5	N/A	N/A	N/A
5.	Coaxial cable	SGS	N/A	N/A	Nov.05, 2007	1 Year
6.	EMI Test Software	Rohde & Schwarz	ESK1	N/A	N/A	N/A

2.2. For Electrostatic Discharge Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Simulators	EM Test	DITOC0103Z	0301-04	Nov.14, 2007	1 Year

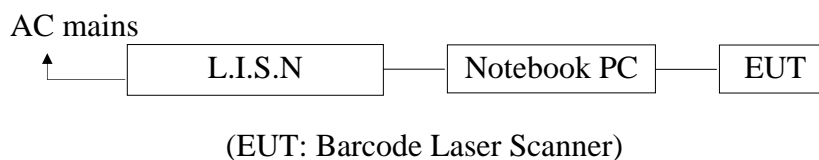
2.3. RF Strength Susceptibility Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	IFR	2032	203002/100	Nov.12, 2007	1 Year
2.	Amplifier	AR	150W1000	301584	NCR	NCR
3.	Dual Directional Coupler	AR	DC6080	301508	NCR	NCR
4.	Isotropic Field Monitor	AR	FM5004	300329	NCR	NCR
5.	Isotropic Field Probe	AR	FP5000	300221	Nov.12, 2007	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	AR	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

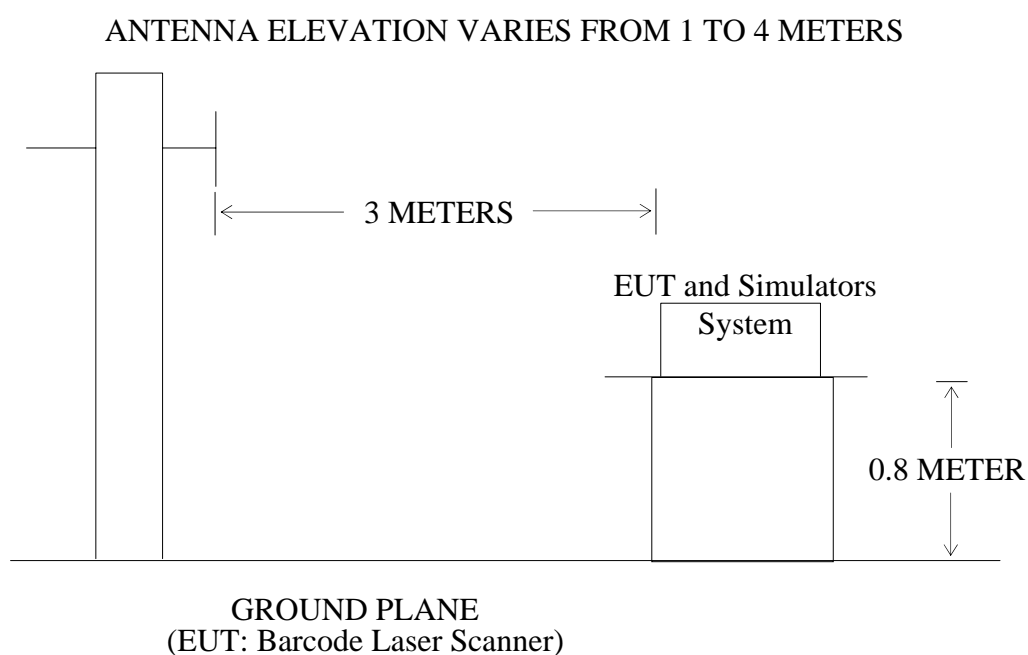
3. RADIATED EMISSION TEST

3.1. Block Diagram of Test

3.1.1. Block diagram of connection between the EUT and simulators



3.1.2. Block diagram of test setup in chamber



3.2. Measuring Standard

EN 55022:2006;

Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

- Note:
- (1) The smaller limit shall apply at the combination point between two frequency bands.
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

3.3. EUT Configuration on Test

The EN 55022 regulations test method must be used to find the maximum emission during radiated emission measurement.

3.3.1.

EUT : Barcode Laser Scanner
Model Number : MD 2250 series
Serial Number : N/A
Applicant : Shenzhen MinDe Electronics Technology Ltd.

3.4. Operating Condition of EUT

3.4.1. Turn on the power.

3.4.2. After that, let the EUT work in test mode (On) and measure it.

3.5. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESI26) is set at 120kHz.

The EUT is tested in Chamber.

The test results are listed in Section 3.6.

3.6. Measuring Results

PASS.

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

All emissions not reported below are too low against the prescribed limits

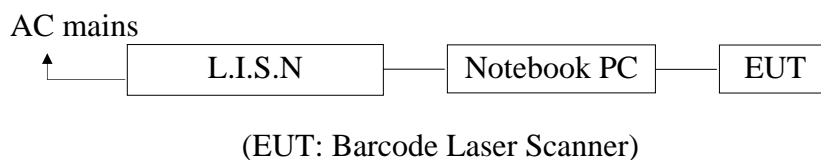
As the peak value is too low against the limit, So the quasi-peak value and average value have been omitted.

The test curves are shown in the APPENDIX I.

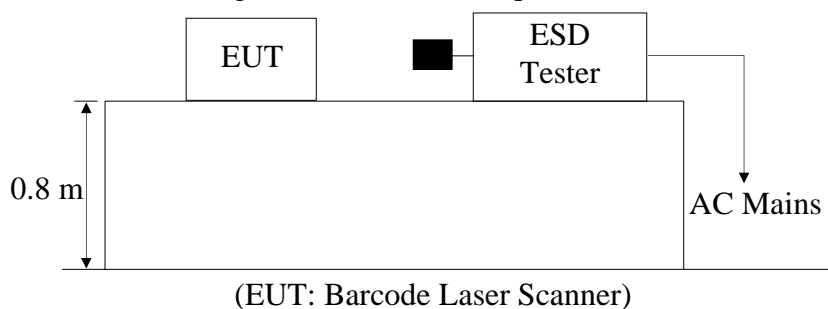
4. ELECTROSTATIC DISCHARGE TEST

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Block diagram of ESD test setup



4.2. Measuring Standard

EN 55024: 1998+A1:2001+A2:2003

IEC 61000-4-2: 2001

Severity Level: Air Discharge Level 3 / $\pm 8\text{KV}$

Contact Discharge Level 2 / $\pm 4\text{KV}$

4.3. Severity Levels and Performance Criterion

4.3.1. Severity Levels

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

4.3.2. Performance Criterion: **B**

4.4. EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

4.5. Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4 except the test setup replaced as Section 4.1.

4.6. Test Procedure

4.6.1. For air discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached to the EUT as fast as possible. After each discharge, the ESD generator -- discharge electrode shall be moved from the EUT. The generator is then retriggered for a new single discharge(interval time between successive discharge is at least 1 second) and the discharge procedure is repeated 20 times (10 with positive and 10 with negative) for each preselected test point. This procedure shall be repeated until all the air discharge completed.

4.6.2. For contact discharge

Same as air discharge, except in the case of contact discharge, the tip of the discharge electrode shall touch conductive accessible parts of the EUT.

4.6.3. Indirect discharge for horizontal coupling plane

At least 20 single (10 times for positive and 10 times for negative) discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The ESD generator positions vertically at a distance of 0.1meter from the EUT and with the discharge electrode touching the coupling plane.

4.6.4. Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m × 0.5m, is placed parallel to, and positioned at a distance of 0.1 meter from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four sides of the EUT are completely illuminated.

4.7. Measuring Results

PASS.

Please refer to the following page

Electrostatic Discharge Test Results

Anbotek Compliance Laboratory Limited

Applicant	: Shenzhen MinDe Electronics Technology Ltd.	Test Date	: Jul.30, 2008
EUT	: Barcode Laser Scanner	Temperature	: 24
M/N	: MD 2250 series	Humidity	: 55%
Contact Discharge	: $\pm 4.0\text{KV}$	Test Mode	: On
Air Discharge	: $\pm 8.0\text{KV}$	Criterion	: B
		Test Engineer	: Jacky

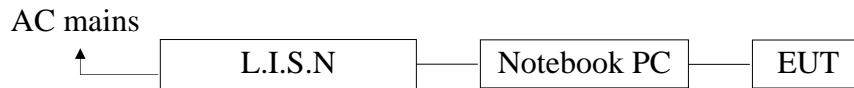
Location	Kind A-Air Discharge C-Contact Discharge	Result
Other 8 points	A	PASS
Screws 8 points	C	PASS
HCP 4points	C	PASS
The front of the VCP 4points	C	PASS
The rear of the VCP 4points	C	PASS
The left of the VCP 4points	C	PASS
The right of the VCP 4points	C	PASS
Remark :	Test Equipment : ESD Simulator: DITOC0103Z(EM Test)	

Reviewer: Rita

5. RF FIELD STRENGTH SUSCEPTIBILITY TEST

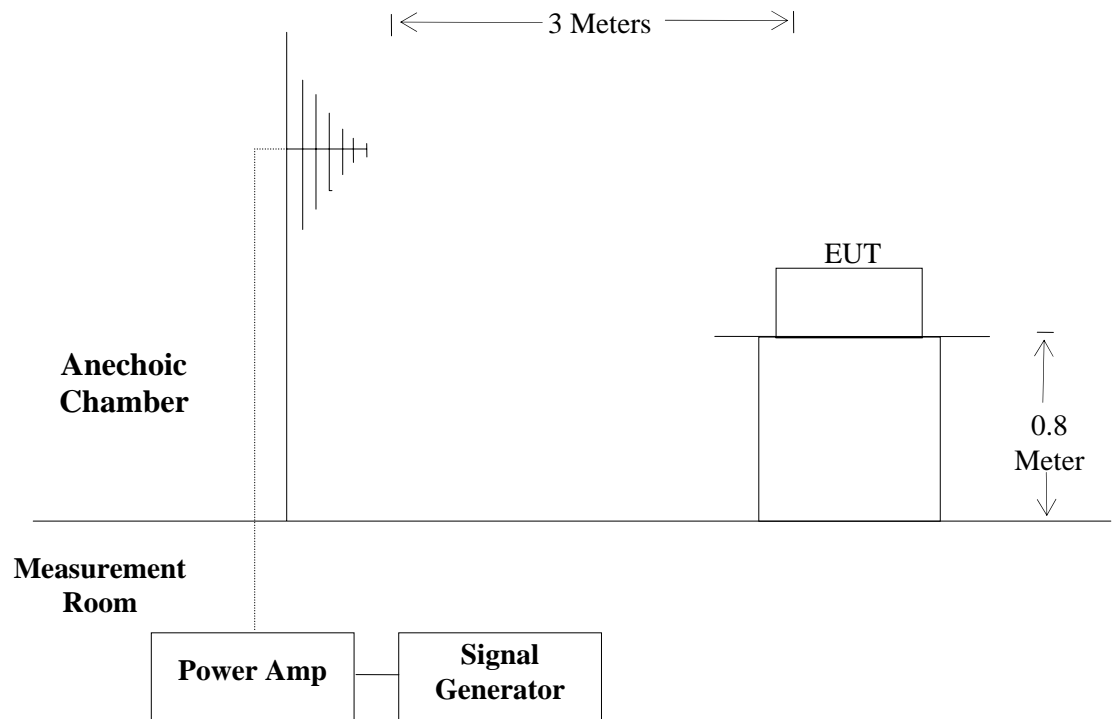
5.1. Block Diagram of Test

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: Barcode Laser Scanner)

5.1.2. Block diagram of RS test setup



(EUT: Barcode Laser Scanner)

5.2. Measuring Standard

EN 55024: 1998+A1: 2001+A2: 2003

IEC 61000-4-3: 2006

Severity Level: 2, 3V / m

5.3. Severity Levels and Performance Criterion

5.3.1. Severity Levels

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

5.3.2. Performance Criterion: **A**

5.4. EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

5.5. Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4 except the test setup replaced as Section 5.1.

5.6. Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

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

All the scanning conditions are as following:

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

5.7. Measuring Results

PASS.

Please refer to the following page

RF Field Strength Susceptibility Test Results

Anbotek Compliance Laboratory Limited

Applicant : Shenzhen MinDe Electronics Technology Ltd.	Test Date : Jul.30, 2008
EUT : Barcode Laser Scanner	Temperature : 24
M/N : MD 2250 series	Humidity : 55%
Field Strength : 3 V/m	Criterion : A
Test Engineer: Jacky	Test Mode : On
	Frequency Range: 80 MHz to 1000 MHz

Modulation:	<input type="checkbox"/> None	<input type="checkbox"/> Pulse	<input checked="" type="checkbox"/> AM 1KHz 80%
-------------	-------------------------------	--------------------------------	---

	Frequency Rang 1: 80-1000MHz		Frequency Rang 2:			
Steps	#	/	%	#	/	%
	Horizontal		Vertical	Horizontal		Vertical
Front	PASS		PASS			
Right	PASS		PASS			
Rear	PASS		PASS			
Left	PASS		PASS			

Test Equipment :

1. Signal Generator : 2032 (IFR)
2. Power Amplifier : 150W1000 (A&R)
3. Power Antenna : 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor : FM5004 (A&R)

Note:

Rika

Reviewer: _____

6. PHOTOGRAPHS

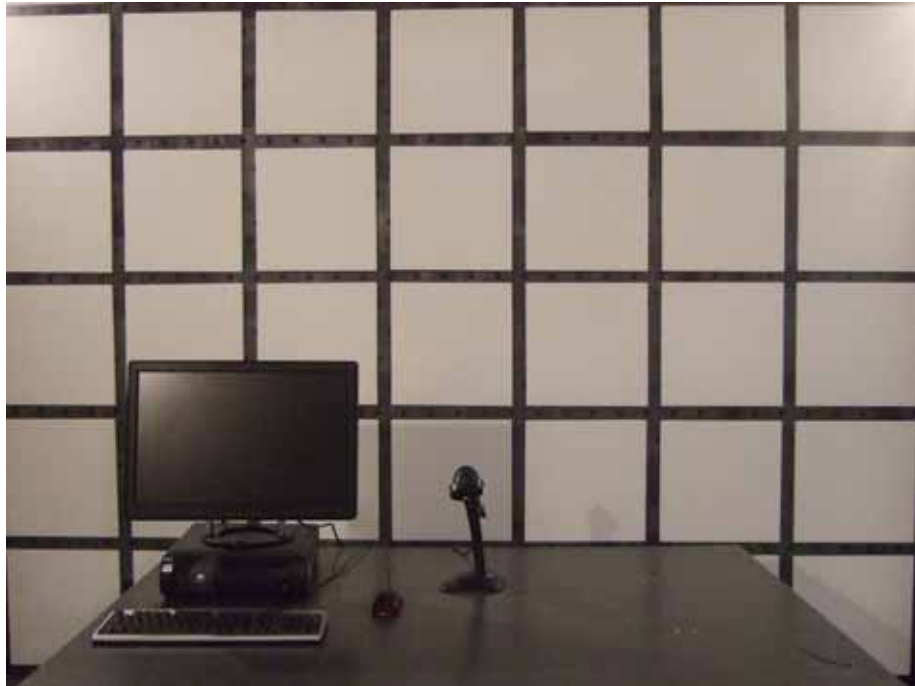
6.1. Photo of Radiated Emission Measurement



6.2. Photo of Electrostatic Discharge Test



6.3. Photo of RF Field Strength susceptibility Test



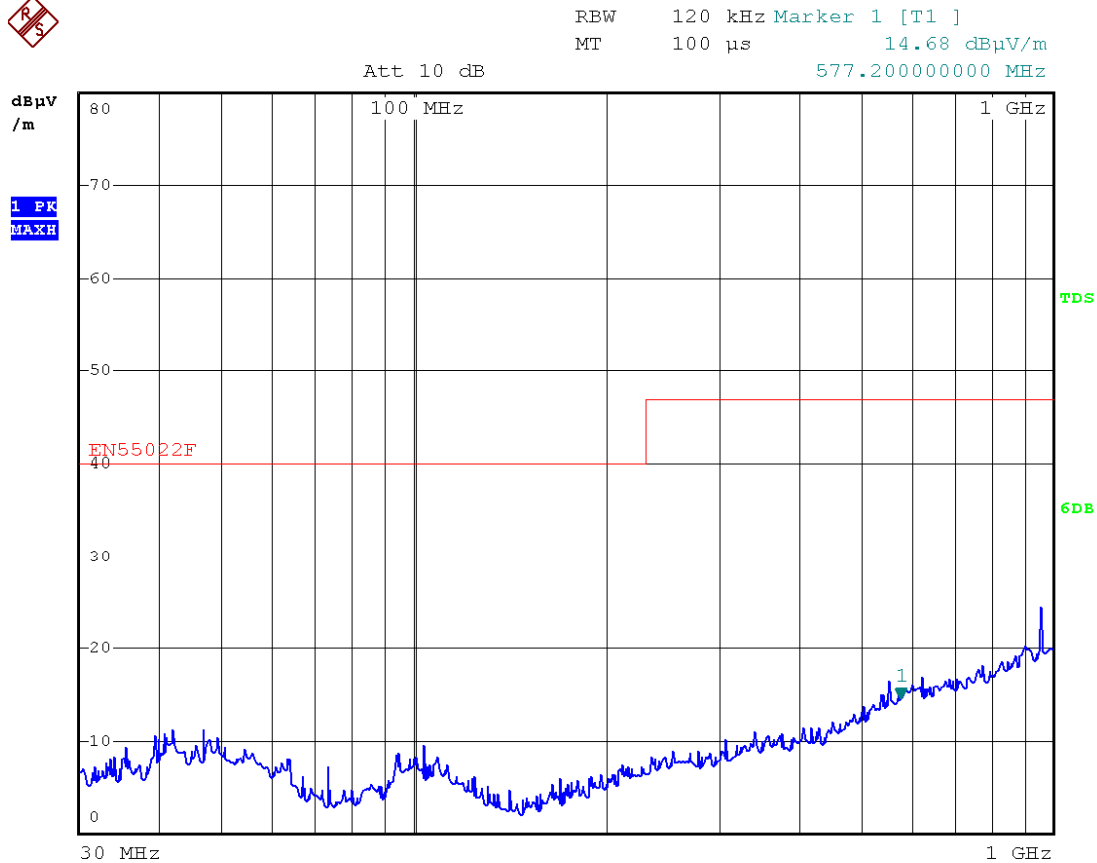
APPENDIX I

(Radiated Emission Test Curves)

Radiated Disturbance

EUT:Barcode Laser Scanner
Operating Condition: ON
Operator: JACKY
Test Specification: Horizontal
Comment: DC 5V
Data: 2008-7-30

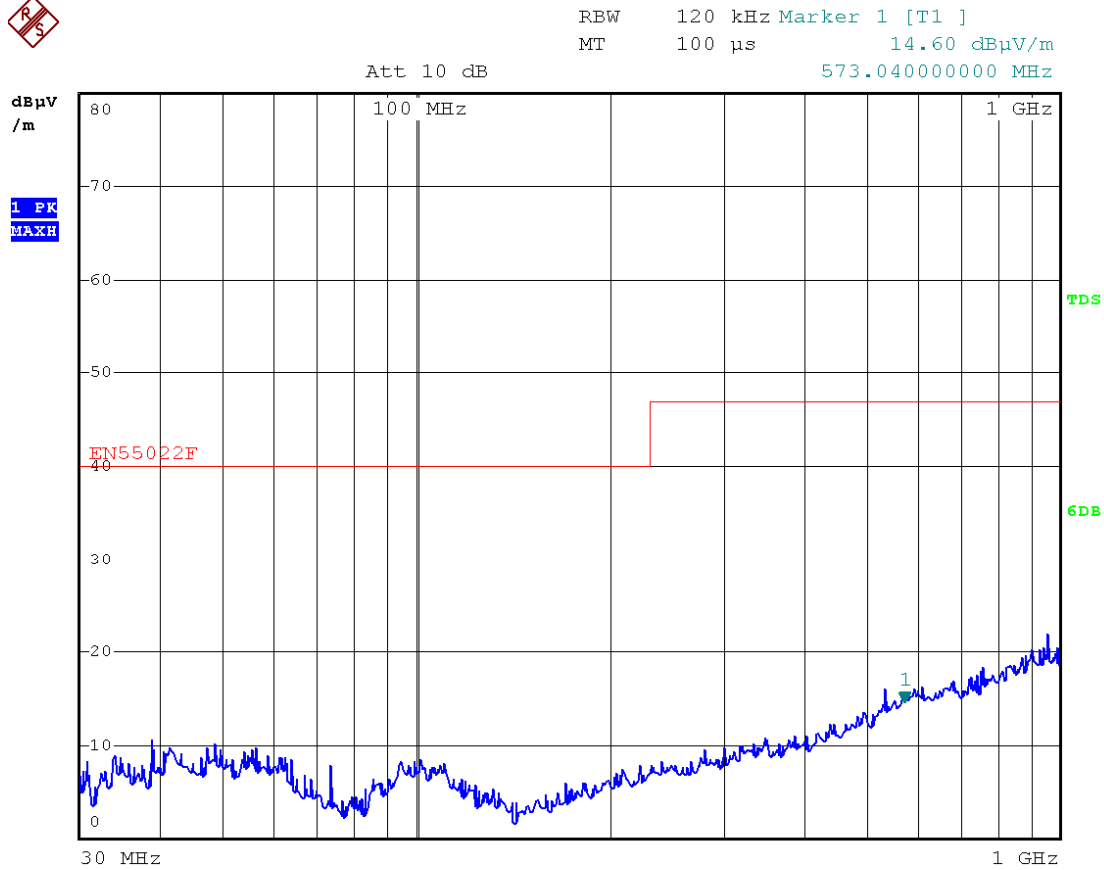
M/N: MD 2250 series



Radiated Disturbance

EUT: Barcode Laser Scanner
Operating Condition: ON
Operator: JACKY
Test Specification: Vertical
Comment: DC 5V
Data: 2008-7-30

M/N: MD 2250 series



APPENDIX II (Photos of EUT)

Figure 1
The EUT-Front View



Figure 2
The EUT-Back View



Figure 3
The EUT-Inside View



Figure 4
PCB of The EUT-Front View



Figure 5
PCB of The EUT-Back View

