TEST RESULT SUMMARY

FCC Part 15 Subpart C Section 15.209
Industry Canada RSS-210 Issue 6 Section 2.6
Industry Canada RSS-Gen Issue 1 Sections 4.4 & 7.2.2
Emissions Requirements

MANUFACTURER	Brady Worldwide, Inc.
NAME OF EQUIPMENT	MiniMark Industrial label printer
MODEL NUMBER	MiniMark
MANUFACTURER'S ADDRESS	6835 Winnetka Circle Brooklyn Park, MN 55428
TEST REPORT NUMBER	WC506404 REV A
TEST DATES	15 December, 2005

According to testing performed at TÜV America Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility (EMC) requirements defined in FCC Subpart C Section 15.209 and RSS-210 Issue 6 Section 2.6 and RSS-Gen Issue 1 Sections 4.4 & 7.2.2

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the EMC requirements of FCC Part 15 “Radio frequency devices” Subpart C “Intentional radiators” Section 15.209 “Radiated emission limits; general requirements” and Industry Canada RSS-210 “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment” Section 2.6 “General Field Strength Limits” and RSS-Gen “General Requirements and Information for the Certification of Radiocommunication Equipment” Section 4.4 “Bandwidth” and section 7.2.2 “Transmitter and Receiver AC Power Lines Conducted Emission Limits”.

Date: 01 February 2006

Tested By

Ross Johnson

Technical Writer

Greg Jakubowski

Not Transferable

EMC Emission - T E S T R E P O R T

Test Report File No.	:	**WC506404 REV A**	Date of issue:	01 February 2006

Model / Serial Nos.	:	MiniMark / 50920927
Product Names	:	MiniMark Industrial label printer wtih RFID module
Applicant	:	Brady Worldwide, Inc.
Manufacturer	:	Brady Worldwide, Inc.
Address	:	6835 Winnetka Circle Brooklyn Park, MN 55428
Test Result	:	■ **Positive** ☐ **Negative**
Test Project Number Reference(s)	:	**WC506404 REV A**
Total pages including Appendices		33

TÜV America Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV America Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP, NIST, or any agency of the US government.

TÜV America Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	32	25 January 2006	Initial Release
A	33	01 February 2006	Revisions include: ▪ Corrected radiated emissions 09-30 MHz data sheet in Appendix A

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D I R E C T O R Y

Sign Explanations:
☐ - not applicable
■ - applicable

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

☐ - EN 50081-1 / 1991		
☐ - EN 55011 / 1991	☐ - Group 1 ☐ - Class A	☐ - Group 2 ☐ - Class B
☐ - EN 55013 / 1990		
☐ - EN 55014 / 1987	☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices	
☐ - EN 55014 / A2:1990		
☐ - EN 55014 / 1993	☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices	
☐ - EN 55015 / 1987		
☐ - EN 55015 / A1:1990		
☐ - EN 55015 / 1993		
☐ - EN 55022 / 1987	☐ - Class A	☐ - Class B
☐ - EN 55022 / 1991	☐ - Class A	☐ - Class B
☐ - BS		
☐ - VCCI	☐ - Class A	☐ - Class B
☐ - FCC Part 22 Subpart H		
☐ - FCC Part 15 Subpart B	☐ - Class A	☐ - Class B
■ - FCC Part 15 Subpart C		
☐ - CISPR 11 (1990)	☐ - Group 1 ☐ - Class A	☐ - Group 2 ☐ - Class B
☐ - CISPR 22 (1993)	☐ - Class A	☐ - Class B
■ - IC RSS-Gen Issue 1		
■ - IC RSS-210 Issue 6		

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General field strength limits
FCC 15.209(a), IC RSS-210, 2.6

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Minimum margin of compliance is 32.5 dB at 127 kHz fundamental

Test location
☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)

Test Distance
■ - 0.3 meters
■ - 1 meter
■ - 3 meters
■ - 10 meters
☐ - 30 meters

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
2517	HFH2-Z2	Polorad	Loop Antenna	879285/036	20-May-06
2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	14-Feb-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limits
FCC 15.209(a) = IC RSS-210 2.6

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

Test Data
See appendix A, pg. A2

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Occupied Bandwidth
IC RSS-Gen, 4.4.1

Test summary
The requirements are: ■ - MET ☐ - NOT MET
The 99% bandwidth is < 10 kHz

Test location
☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3367	E4440A	Agilent	Spectrum Analyzer	MY43362222	02-Sep-06
2517	HFH2-Z2	Polorad	Loop Antenna	879285/036	20-May-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test Data
See appendix A, pg. A3

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RSS-Gen 7.2.2 Transmitter and Receiver AC Power Lines Conducted Emission Limits

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Minimum margin of compliance is 1.6 dB at 250 kHz

Test location
☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
2416	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1437	Code B
2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	14-Feb-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

Test limits

Table 2 - AC Power Lines Conducted Emission Limits

Frequency range (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

*Decreases with the logarithm of the frequency
(FCC class B)

Test data
Appendix A, pgs. A4 – A8

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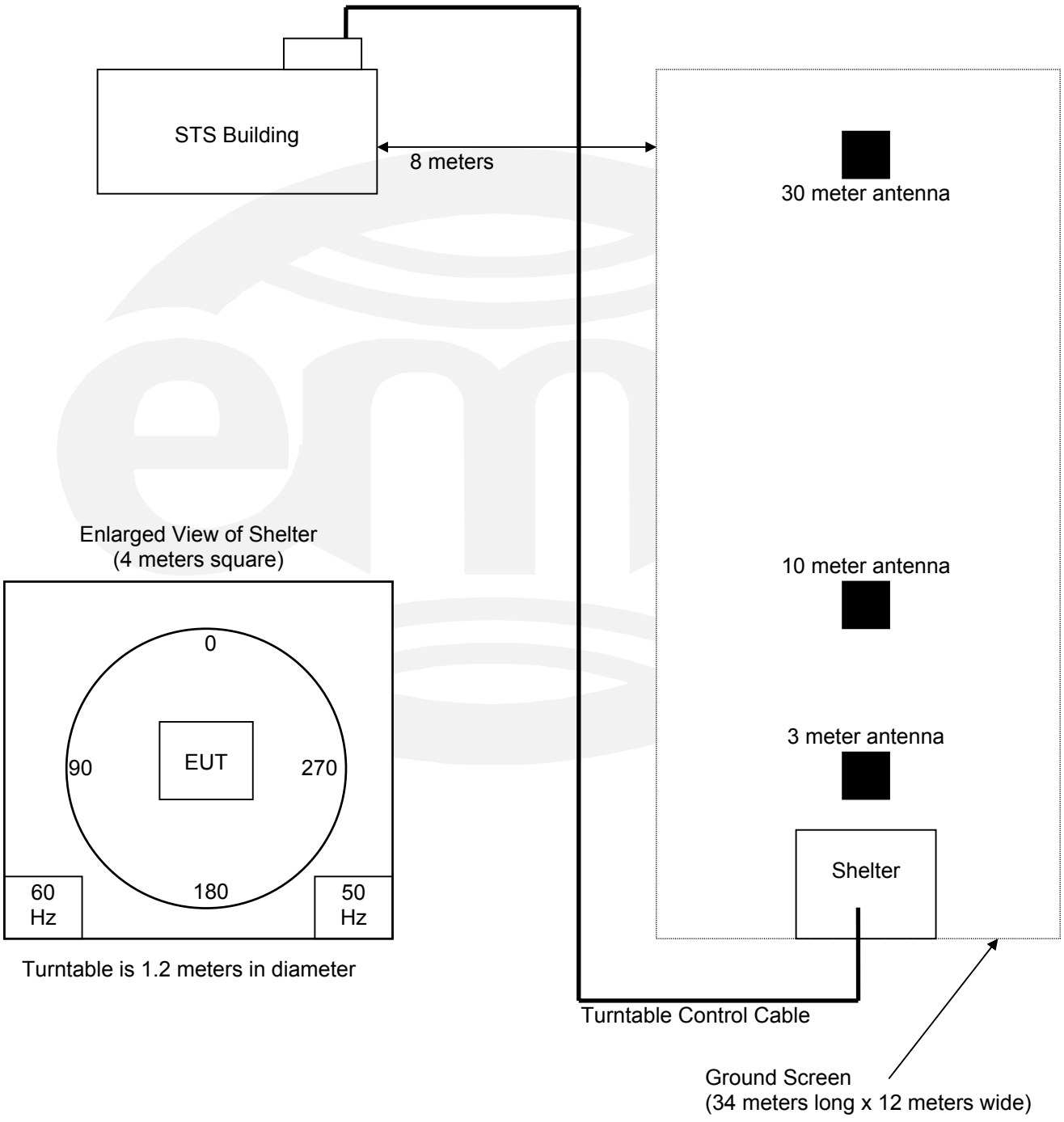
TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Small Test Site (STS)



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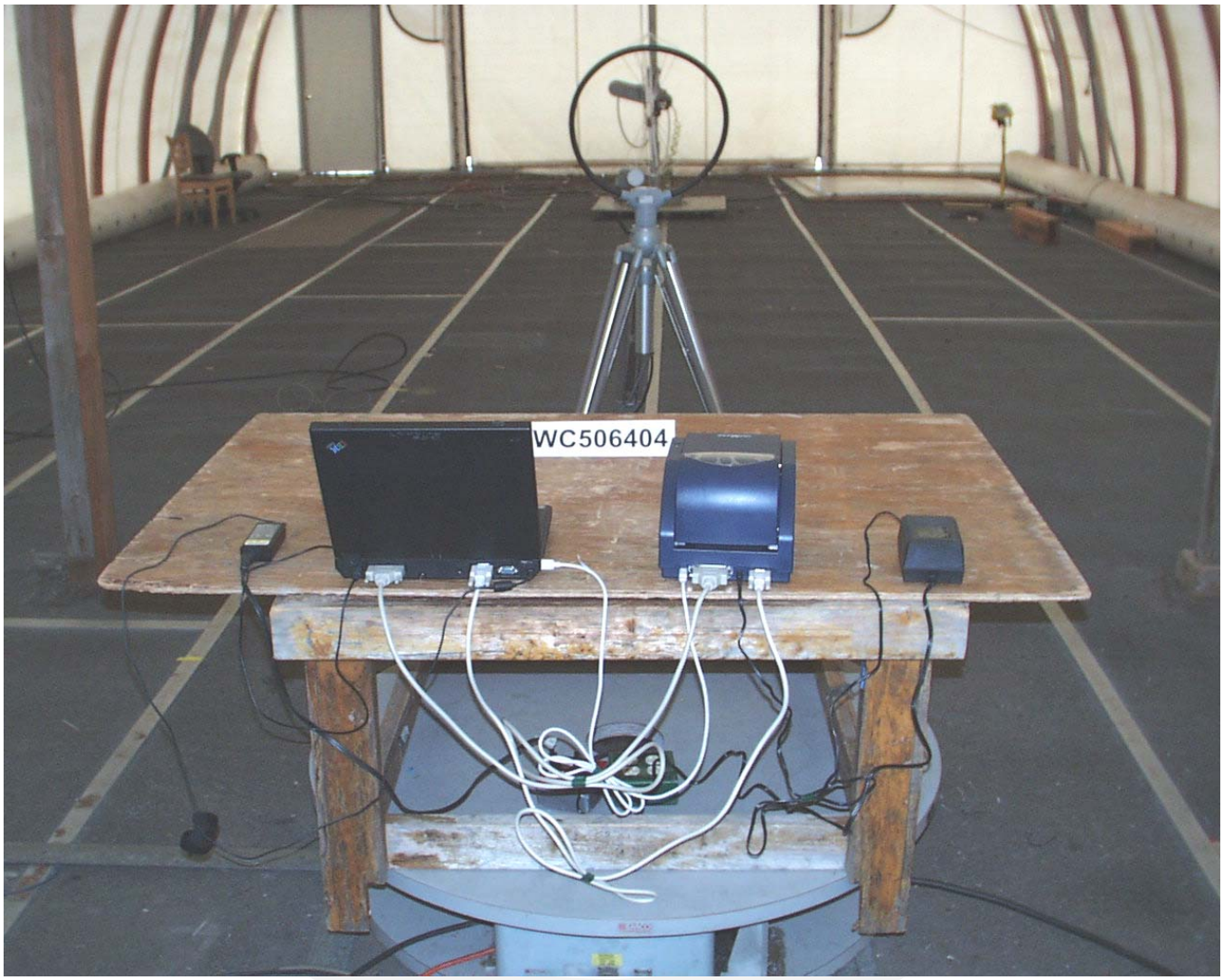
Test-setup photo, radiated emissions



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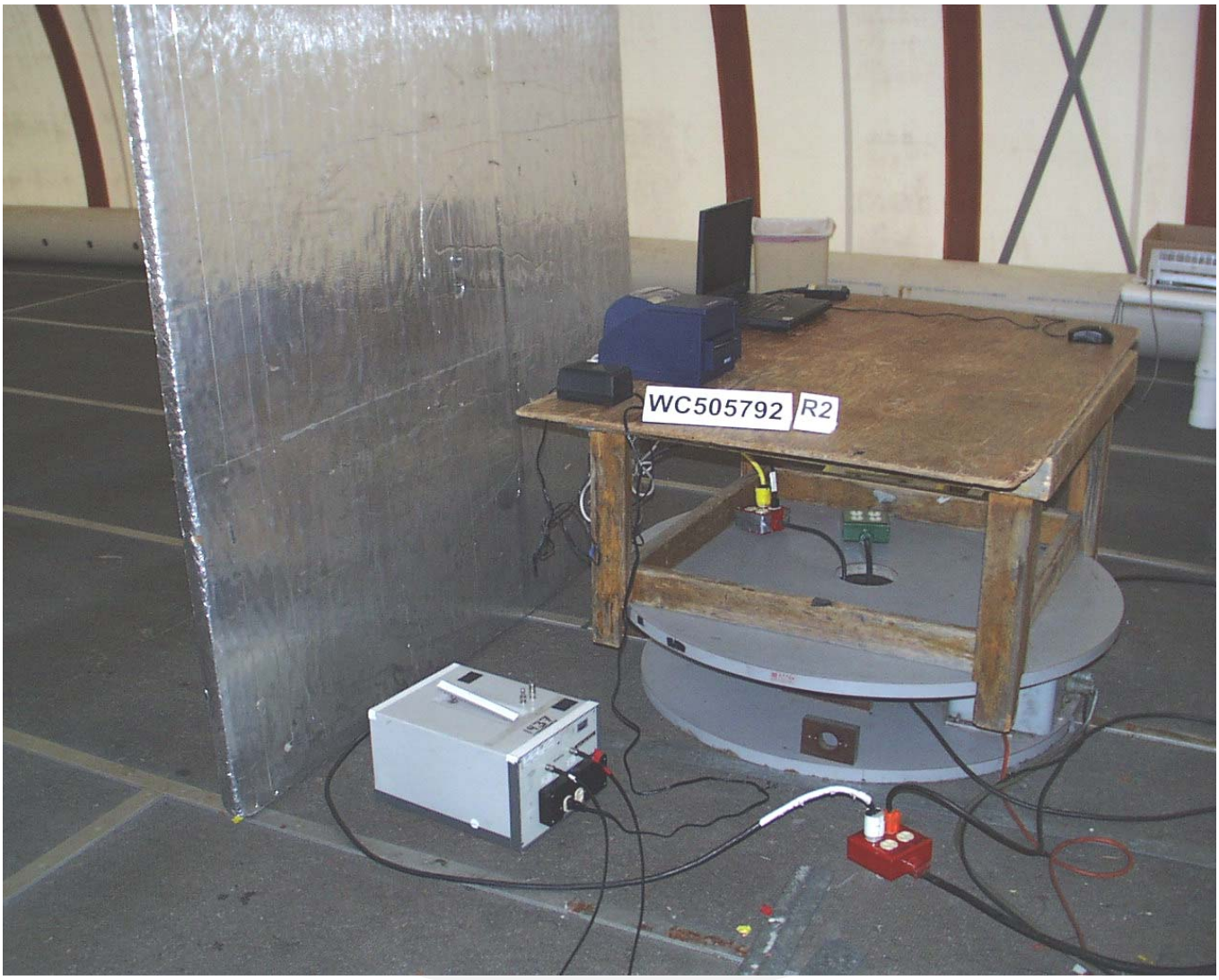
Test-setup photo, radiated emissions

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

Test-setup photo, conducted emissions
Testing was performed under report number WC505792

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

Test-setup photo, conducted emissions
Testing was performed under report number WC505792



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Test Operation Mode:

The device under test was operated under the following conditions during emissions testing:

☐ - Standby

☐ - Test program (H - Pattern)

☐ - Test program (color bar)

☐ - Test program (customer specific)

☐ - Practice operation

■ - Printing labels - RFID board reading tags on tape supply roll

Configuration of the device under test:

■ - See the block diagram, appendix B, pg. B8

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DEVIATIONS FROM STANDARD:

None.

GENERAL REMARKS:

Conducted emissions testing was done previously under test report number WC505792

Modifications required to pass:
■ None
☐ As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:
■ None
☐ As indicated in the Test Plan

SUMMARY:

The requirements according to the technical regulations are

■ - met
☐ - **not** met.

The device under test does
■ - fulfill the general approval requirements mentioned on page 3.
☐ - **not** fulfill the general approval requirements mentioned on page 3.

EUT Received Date	15 December, 2005
Condition of EUT	Normal
Testing Start Date	15 December, 2005
Testing End Date	15 December, 2005

- TÜV AMERICA INC -

Tested By:

Ross Johnson

Reviewed By:

Greg Jakubowski

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Appendix A

Test data

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

RADIATED EMISSIONS (< 30 MHz)

Test Report #:	WC506404	Test Area:	STS			
EUT Model #:	MINIMARK	Date:	12/15/2005			
EUT Serial #:	50920927	EUT Power:	60Hz/120VAC	Temperature:	14.0	°C
Test Method:	FCC 15.209, IC RSS-210			Air Pressure:	97.0	kPa
Customer:	BRADY CORPORATION			Rel. Humidity:	70.0	%
EUT Description:	BARCODE LABEL PRINTER					
Notes:						
Data File Name:	6404.dat			Page:	1 of 1	

Fundamental transmit signal = 127 kHz

dBuV/m - Avg

kHz	0.3m avg	1m avg	3m avg	10m avg	300m*	Limit	Delta
123	87	71	48	-	-30.00	25.81	-55.81
125	96	81	61	-	-9.00	25.67	-34.67
127	**104**	**89**	**67**	**40**	**-7.00**	**25.53**	**-32.53**
129	90	76	54	-	-18.00	25.39	-43.39
131	57	42	23	-	-45.00	25.26	-70.26
133	46	30	17	-	-41.00	25.13	-66.13
135	44	29	16	-	-40.00	25.00	-65.00
381	71	55	36	-	-34.00	15.99	-49.99

* Extrapolated values using formula: 300m = 3m - (2 x (0.3m - 3m))

dBuV/m – pk

kHz	0.3m	1m	3m	10m pk	300m*	Limit	Delta
127				**46**	**-1.00**	**45.53**	**-46.53**

dBuV/m - Qp

kHz	0.3m qp	1m qp	3m qp	10m qp	30**	Limit	Delta
508	45	33	28	-	-35.00	33.49	-68.49
635	69	57	-	-	-11.00	31.55	-42.55
889	63	50	-	-	-17.00	28.63	-45.63
1143	57	45	-	-	-23.00	26.44	-49.44

** Extrapolated values using 40 dB / decade roll off

No emissions related to the transmitter were detected above 1143 kHz

Tested by: Ross Johnson

Printed | Signature

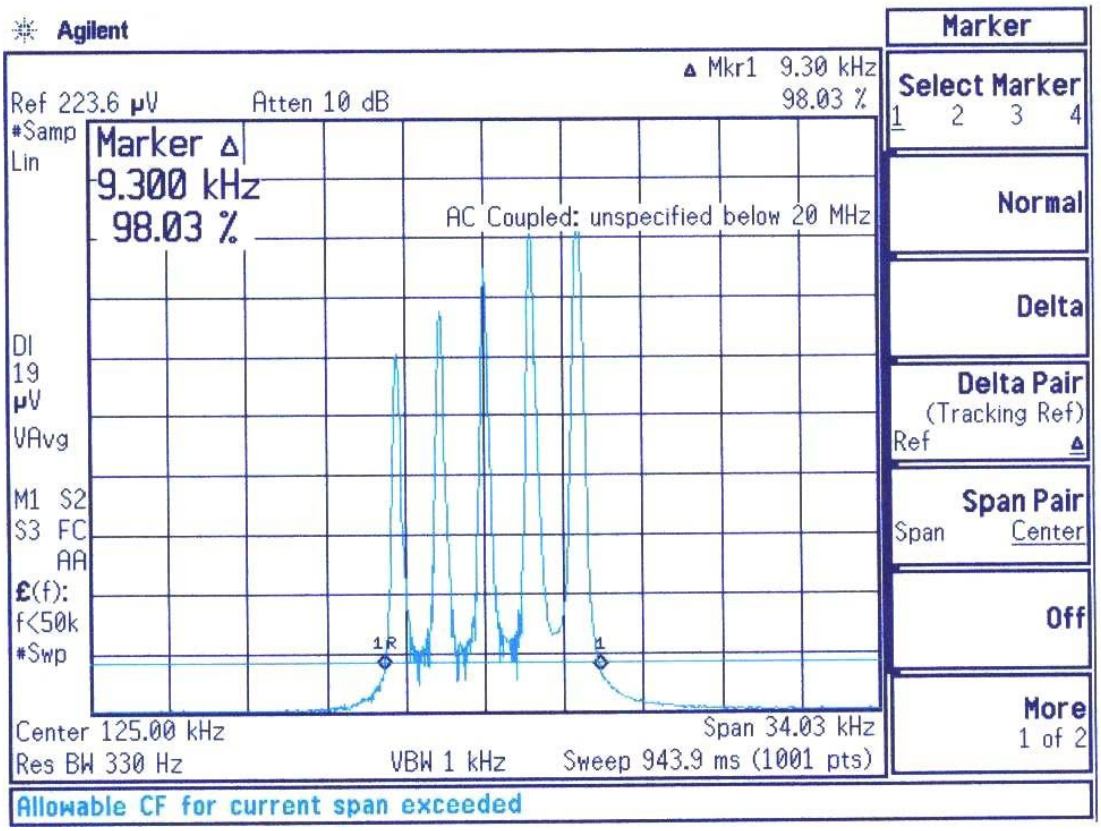
Reviewed by: Greg Jakubowski

Printed | Signature

Occupied Bandwidth

Test Report #:	WC506404	Test Area:	STS		
EUT Model #:	MINIMARK	Date:	12/15/05		
EUT Serial #:	N/A	EUT Power:	60Hz/120VAC	Temperature:	14.0 °C
Test Method:	RSS-Gen			Air Pressure:	97.0 kPa
Customer:	BRADY CORPORATION			Rel. Humidity:	70.0 %
EUT Description:	BARCODE LABEL PRINTER				
Notes:					
Data File Name:				Page:	1 of 1

99% emission bandwidth



Tested by:	Ross Johnson		
	Printed		Signature
Reviewed by:	Greg Jakubowski		
	Printed		Signature

CONDUCTED EMISSIONS

Test Report #:	WC505792 Run 2	Test Area:	STS		
EUT Model #:	MiniMark	Date:	12/1/2005		
EUT Serial #:		EUT Power:	60 Hz / 120 VAC	Temperature:	16.0 °C
Test Method:	FCC B			Air Pressure:	99.0 kPa
Customer:	Brady Corporation			Rel. Humidity:	40.0 %
EUT Description:	Barcode label printer				
Notes:					
Data File Name:	5792.dat			Page:	1 of 5

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
150.0 kHz	65.35 Qp	0.2 / 3.0 / 0.0 / 0.0	68.55	L1	2.55	n/a
150.0 kHz	36.2 Av	0.2 / 3.0 / 0.0 / 0.0	39.4	L1	n/a	-16.6
190.0 kHz	64.59 Qp	0.2 / 2.2 / 0.0 / 0.0	66.99	L1	2.95	n/a
190.0 kHz	33.07 Av	0.2 / 2.2 / 0.0 / 0.0	35.47	L1	n/a	-18.57
250.0 kHz	58.18 Qp	0.2 / 1.75 / 0.0 / 0.0	60.13	L1	-1.63	n/a
250.0 kHz	26.53 Av	0.2 / 1.75 / 0.0 / 0.0	28.48	L1	n/a	-23.28
715.0 kHz	27.82 Qp	0.4 / 0.5 / 0.0 / 0.0	28.72	L1	-27.28	n/a
715.0 kHz	-1.52 Av	0.4 / 0.5 / 0.0 / 0.0	-0.62	L1	n/a	-46.62
1.5 MHz	20.69 Qp	0.6 / 0.5 / 0.0 / 0.0	21.79	L1	-34.21	n/a
1.5 MHz	3.26 Av	0.6 / 0.5 / 0.0 / 0.0	4.36	L1	n/a	-41.64
2.706 MHz	14.97 Qp	0.88 / 0.5 / 0.0 / 0.0	16.35	L1	-39.65	n/a
2.706 MHz	4.12 Av	0.88 / 0.5 / 0.0 / 0.0	5.5	L1	n/a	-40.5
10.0 MHz	26.55 Qp	1.8 / 0.5 / 0.0 / 0.0	28.85	L1	-31.15	n/a
10.0 MHz	21.48 Av	1.8 / 0.5 / 0.0 / 0.0	23.78	L1	n/a	-26.22
20.002 MHz	21.93 Qp	2.6 / 0.75 / 0.0 / 0.0	25.28	L1	-34.72	n/a
20.002 MHz	14.43 Av	2.6 / 0.75 / 0.0 / 0.0	17.78	L1	n/a	-32.22
150.0 kHz	58.63 Qp	0.2 / 3.0 / 0.0 / 0.0	61.83	N	-4.17	n/a
150.0 kHz	26.95 Av	0.2 / 3.0 / 0.0 / 0.0	30.15	N	n/a	-25.85
190.0 kHz	58.71 Qp	0.2 / 2.2 / 0.0 / 0.0	61.11	N	-2.93	n/a
190.0 kHz	27.25 Av	0.2 / 2.2 / 0.0 / 0.0	29.65	N	n/a	-24.39
250.0 kHz	57.37 Qp	0.2 / 1.75 / 0.0 / 0.0	59.32	N	-2.44	n/a
250.0 kHz	25.97 Av	0.2 / 1.75 / 0.0 / 0.0	27.92	N	n/a	-23.84
715.0 kHz	22.15 Qp	0.4 / 0.5 / 0.0 / 0.0	23.05	N	-32.95	n/a
715.0 kHz	-3.45 Av	0.4 / 0.5 / 0.0 / 0.0	-2.55	N	n/a	-48.55
1.5 MHz	10.19 Qp	0.6 / 0.5 / 0.0 / 0.0	11.29	N	-44.71	n/a

Tested by: J. C. Sausen

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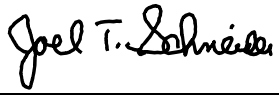
Signature

Reviewed by: Joel Schneider

Printed



Signature

CONDUCTED EMISSIONS

Test Report #:	WC505792 Run 2	Test Area:	STS		
EUT Model #:	MiniMark	Date:	12/1/2005		
EUT Serial #:		EUT Power:	60 Hz / 120 VAC	Temperature:	16.0 °C
Test Method:	FCC B			Air Pressure:	99.0 kPa
Customer:	Brady Corporation			Rel. Humidity:	40.0 %
EUT Description:	Barcode label printer				
Notes:					
Data File Name:	5792.dat			Page:	2 of 5

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
1.5 MHz	1.52 Av	0.6 / 0.5 / 0.0 / 0.0	2.62	N	n/a	-43.38
2.706 MHz	10.75 Qp	0.88 / 0.5 / 0.0 / 0.0	12.13	N	-43.87	n/a
2.706 MHz	-7.43 Av	0.88 / 0.5 / 0.0 / 0.0	-6.05	N	n/a	-52.05
10.0 MHz	22.21 Qp	1.8 / 0.5 / 0.0 / 0.0	24.51	N	-35.49	n/a
10.0 MHz	17.13 Av	1.8 / 0.5 / 0.0 / 0.0	19.43	N	n/a	-30.57
20.002 MHz	21.86 Qp	2.6 / 0.75 / 0.0 / 0.0	25.21	N	-34.79	n/a
20.002 MHz	12.6 Av	2.6 / 0.75 / 0.0 / 0.0	15.95	N	n/a	-34.05

End of conducted emission measurements for FCC A.

Tested by: J. C. Sausen — Printed — Signature

Reviewed by: Joel Schneider — Printed — Signature

CONDUCTED EMISSIONS

Test Report #:	WC505792 Run 2	Test Area:	STS		
EUT Model #:	MiniMark	Date:	12/1/2005		
EUT Serial #:		EUT Power:	60 Hz / 120 VAC	Temperature:	16.0 °C
Test Method:	FCC B			Air Pressure:	99.0 kPa
Customer:	Brady Corporation			Rel. Humidity:	40.0 %
EUT Description:	Barcode label printer				
Notes:					
Data File Name:	5792.dat			Page:	3 of 5

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
190.0 kHz	64.59 Qp	0.2 / 2.2 / 0.0 / 0.0	66.99	L1	2.95
150.0 kHz	65.35 Qp	0.2 / 3.0 / 0.0 / 0.0	68.55	L1	2.55
250.0 kHz	58.18 Qp	0.2 / 1.75 / 0.0 / 0.0	60.13	L1	-1.63
715.0 kHz	27.82 Qp	0.4 / 0.5 / 0.0 / 0.0	28.72	L1	-27.28
10.0 MHz	26.55 Qp	1.8 / 0.5 / 0.0 / 0.0	28.85	L1	-31.15
1.5 MHz	20.69 Qp	0.6 / 0.5 / 0.0 / 0.0	21.79	L1	-34.21
20.002 MHz	21.93 Qp	2.6 / 0.75 / 0.0 / 0.0	25.28	L1	-34.72
2.706 MHz	14.97 Qp	0.88 / 0.5 / 0.0 / 0.0	16.35	L1	-39.65

150 kHz and 190 kHz are from unintentional radiator portion of device – same levels with transmitter disabled.

Tested by: J. C. Sausen

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Reviewed by: Joel Schneider

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CONDUCTED EMISSIONS

Test Report #:	WC505792 Run 2	Test Area:	STS		
EUT Model #:	MiniMark	Date:	12/1/2005		
EUT Serial #:		EUT Power:	60 Hz / 120 VAC	Temperature:	16.0 °C
Test Method:	FCC B			Air Pressure:	99.0 kPa
Customer:	Brady Corporation			Rel. Humidity:	40.0 %
EUT Description:	Barcode label printer				
Notes:					
Data File Name:	5792.dat			Page:	4 of 5

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
150.0 kHz	36.2 Av	0.2 / 3.0 / 0.0 / 0.0	39.4	L1	-16.6
190.0 kHz	33.07 Av	0.2 / 2.2 / 0.0 / 0.0	35.47	L1	-18.57
250.0 kHz	26.53 Av	0.2 / 1.75 / 0.0 / 0.0	28.48	L1	-23.28
10.0 MHz	21.48 Av	1.8 / 0.5 / 0.0 / 0.0	23.78	L1	-26.22
20.002 MHz	14.43 Av	2.6 / 0.75 / 0.0 / 0.0	17.78	L1	-32.22
2.706 MHz	4.12 Av	0.88 / 0.5 / 0.0 / 0.0	5.5	L1	-40.5
1.5 MHz	3.26 Av	0.6 / 0.5 / 0.0 / 0.0	4.36	L1	-41.64
715.0 kHz	-1.52 Av	0.4 / 0.5 / 0.0 / 0.0	-0.62	L1	-46.62

Tested by: J. C. Sausen

Printed

Signature

Reviewed by: Joel Schneider

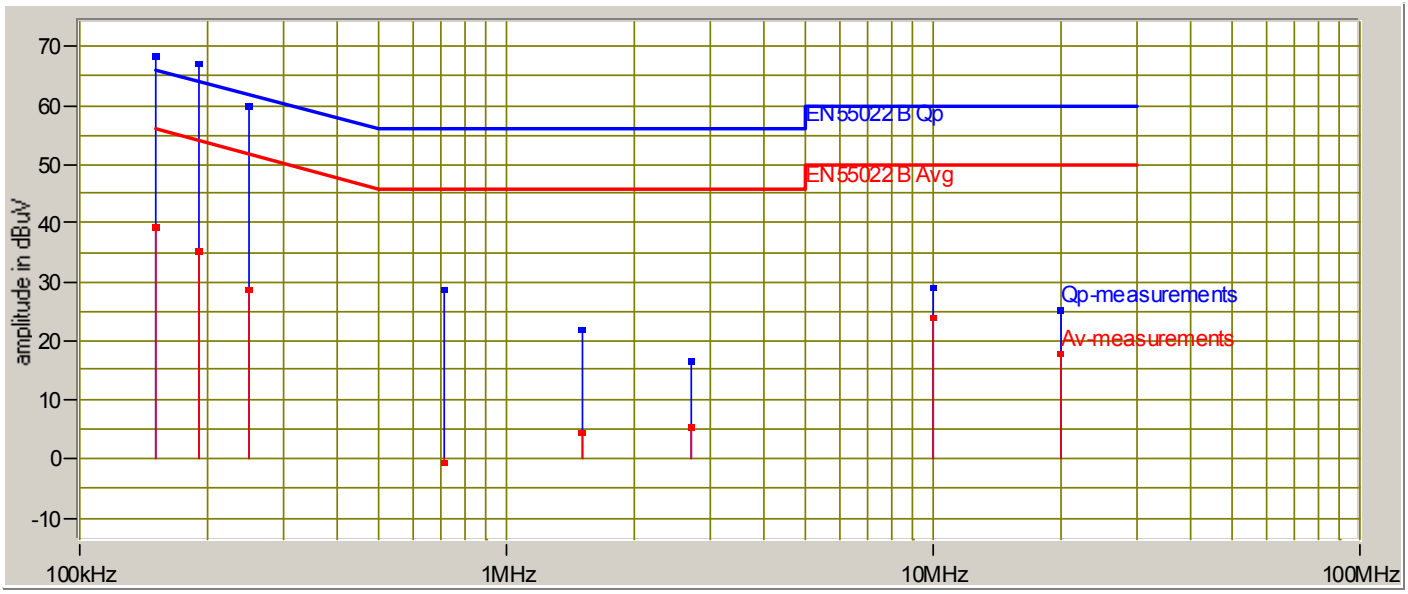
Printed

Signature

CONDUCTED EMISSIONS

Test Report #:	WC505792 Run 2	Test Area:	STS		
EUT Model #:	MiniMark	Date:	12/1/2005		
EUT Serial #:		EUT Power:	60 Hz / 120 VAC	Temperature:	16.0 °C
Test Method:	FCC B			Air Pressure:	99.0 kPa
Customer:	Brady Corporation			Rel. Humidity:	40.0 %
EUT Description:	Barcode label printer				
Notes:					
Data File Name:	5792.dat			Page:	5 of 5

Graph:



Tested by: J. C. Sausen

Printed

Signature

Reviewed by: Joel Schneider

Printed

Signature

Appendix B

Constructional Data Form

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

Form

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company:	Brady Worldwide, Inc.		
Address:	6835 Winnetka Circle		
	Brooklyn Park, MN		
	55428		
Contact:	Gary Gunderson	Position:	Compliance Engineer
Phone:	763-536-6474	Fax:	763-536-0769
E-mail Address:	gary_gunderson@bradycorp.com		

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description	label printer with RFID module
EUT Name	MiniMark Industrial label printer
Model No.:	MiniMark
Serial No.:	50920927
Product Options:	
Configurations to be tested:	Standard Printer with RFID board and antenna

Equipment Modification (***If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)***

Modifications since last test:	RFID module installed (original test on ARGOX model A200)
Modifications made during test:	

Test Objective(s): ***Please indicate the tests to be performed, entering the applicable standard(s) where noted.***

- ☐ EMC Directive 89/336/EEC (EMC) Std:
- ☐ Machinery Directive 89/392/EEC (EMC Std:
- ☐ Medical Device Directive 93/42/EEC (EMC) Std:
- ☐ Vehicle Directive 72/245/EEC (EMC) Std:
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☒ FCC: Class ☒ A ☐ B Part
- ☐ VCCI: Class ☐ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B
- ☒ Canada: Class ☒ A ☐ B
- ☐ Australia: Class ☐ A ☐ B
- ☐ Other:

Third Party Certification, if applicable (*Signature on Page 6 Required)

- ☐ Attestation of Conformity (AoC)*
- ☐ Certificate of Conformity (CoC)*
- Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III
  (Press **F1** when field is selected to show additional information on Protection Class.)
- ☒ FCC / TCB Certification
- ☐ E-Mark Certification
- ☐ EMC Certification (used with Octagon Mark)*
- ☐ Compliance Document*
- ☒ Industry Canada / FCB Certification
- ☐ Taiwan Certification

Form

EMC Test Plan and Constructional Data Form

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TÜV America should:

☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____

☐ Continue testing to complete test series.

☐ Continue testing to define corrective action.

☐ Stop testing.

EUT Specifications and Requirements

Length: 27 cm Width: 20 Height: 17.5 cm Weight: kg

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 19.0 VAC 50/60 Hz (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: 1

Current (Amps/phase(max)): 4.0 Current (Amps/phase(nominal)): _____

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
industrial/Factory

EUT Power Cable

☐ Permanent OR ☒ Removable Length (in meters): _____

☐ Shielded OR ☒ Unshielded

☐ Not Applicable

Form

EMC Test Plan and Constructional Data Form

America

EUT Interface Ports and Cables

Type	Analog	Digital	During Test: Active	During Test: Passive	Qty	Shielding: Yes	Shielding: No	Shielding: Type	Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	☒	☐	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
RS232	☐	☒	☐	☒		☒	☐	Foil over drain wire	360 degree termination to shell	meatalized 9-pin	Characteristic Z	2	☒	☐
USB	☐	☒	☒	☐		☒	☐	braid over foil	360 degree termination to shell	USB	Characteristic Z	2	☒	☐
Centronics	☐	☒	☐	☒		☒	☐	Braid	360 degree termination to shell	Metalized	Characteristic Z	3	☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
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	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: - Markware 3.4

Description: Label making software

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Printing labels - RFID board reading tags on tape supply roll

2.

3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
MiniMark label printer	MiniMark	50920927	N/A

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc) This information is required for FCC & Taiwan testing.

Description	*Model #*	*Serial #*	*FCC ID #*
IBM LAPTOP Computer	2626	AF-1AFY5	409TA1-25473-M5-E

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
20MHz		main board	real time clock
48MHz		Main Board	
16 MHz		RFID circuit board	RFID control circuit
125 Khz		RFID	RFID transmitter

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
LUNG HO Ent.	MW66-1904000 120 VAC input 19 VAC output		☐ Switched-mode: (Frequency) _____ ☒ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*

Form

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)				
Description	***Manufacturer***	***Part # or Value***	***Qty***	***Component # / Location***
Capacitors		2200 uF		09-22803-013
Ferrite Bead		55-85 ohm 25- 100MHZ		25-72515-001
Ferrite Core		25-100MHZ 700-750 ohm		25-70610-001

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

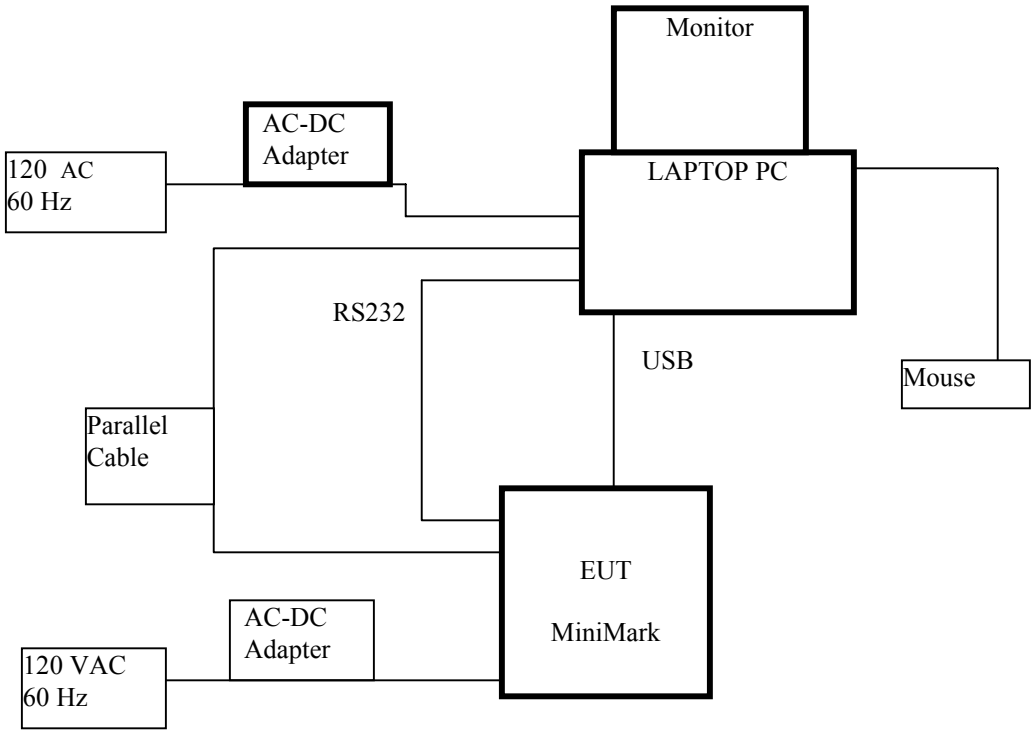
(PLEASE INSERT "**ELECTRONIC SIGNATURE**" BELOW IF POSSIBLE)

Authorization Signatures (Signature Required for Certifications checked on pg 1)

Customer authorization to perform tests according to this test plan. Gary Gunderson	Date 12-12-05
Test Plan/CDF Prepared By (please print)	Date 12-12-05

EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



EMC Block Diagram Form

Authorization Signatures

December 15, 2005

Customer authorization to perform tests according to this test plan.	Date
Gary Gunderson	December 15, 2005
Test Plan/CDF Prepared By (please print)	Date
Reviewed by TÜV Product Service Associate	Date

Appendix C

Measurement Protocol

TÜV AMERICA INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 112205

MEASUREMENT PROTOCOL

Environmental conditions in the lab,
Temperature: 14 - 16°C
Relative Humidity: 40 - 70%
Atmospheric pressure: 97.0 - 99.0 kPa

Test Methodology
Emissions testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty
The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ±1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification
The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Conducted Emissions
The final level, in dBμV, equals the EMI receiver level plus the cable loss and LISN factor.

Radiated Emissions
The final level, in dBμV/m, equals the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A.
Example:

FREQ	LEVEL		CABLE/ANT/PREAMP			FINAL	POL/HGT/AZ			DELTA1
(MHz)	(dBuV)		(dB)	(dB/m)	(dB)	(dBuV/m)		(m)	(deg)	
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5 =	29.1	V	1.0	0.0	-10.9

Test Equipment
All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

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