TEST REPORT

FCC Part 15 Subpart C Section 15.207
FCC Part 15 Subpart C Section 15.209
IC RSS-210 Issue 8
IC RSS-Gen Issue 3

MANUFACTURER'S NAME	Datacard Group 11111 Bren Road West Minnetonka MN 55343
PRODUCT NAME	CD800
MODEL NUMBER(S) TESTED	PX20
SERIAL NUMBER(S) TESTED	A00290
PRODUCT DESCRIPTION	Card Printer with 13.56 MHz RFID
TEST REPORT NUMBER	WC1010953.1
TEST DATE(S)	11 January - 17 February 2011

TÜV SÜD America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the applicable EMC requirements of FCC Part 15 Subpart C Sections 15.207 “Conducted Limits” and 15.209 “Radiated emission limits; general requirements” and IC RSS-210 “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment” and IC RSS-Gen “General Requirements and Information for the Certification of Radiocommunication Equipment”.

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.

Date: 28 February 2011

Location: Taylors Falls MN
USA

Greg S Jakubowski
EMC Test Engineer

Joel T Schneider
Senior EMC Engineer

Not Transferable

EMC TEST REPORT

Test Report No.	**WC1010953.1**	Date of issue:	28 February 2011
Product Name	CD800		
Model(s) Tested	PX20		
Serial No(s) Tested	A00290		
Product Description	Card Printer with 13.56 MHz RFID		
Manufacturer	Datacard Group 11111 Bren Road West Minnetonka MN 55343		

Test Result ■ **Positive** ☐ **Negative**

TÜV SÜD 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 SÜD America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America Inc issued reports.

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REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	28	28 February 2011	Initial Release

DIRECTORY

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EMC TEST REGULATIONS:
The tests were performed according to the following regulations:
FCC Part 15 Subpart C Section 15.207 Paragraph (a)
FCC Part 15 Subpart C Section 15.209 Paragraphs (a), (c), (f)
IC RSS-210 Issue 8 Section 2.5
IC RSS-Gen Issue 3 Sections 4.6.1, 7.2.5

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 22°C
Atmospheric pressure	: 99kPa
Relative Humidity	: 20%

POWER SUPPLY UTILIZED
Power supply system : 110 V / 60 Hz

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

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

SIGN EXPLANATIONS
☐ - not applicable
■ - applicable

General field strength limits 0.009 – 30 MHz

FCC 15.209(a), FCC 15.209(c), IC RSS-210 2.5, RSS-Gen 7.2.5

Test summary

The requirements are: ■ - MET ☐ - NOT MET

Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 8.2.2.

Maximum field strength of the fundamental is 28 dBμV/m* or 25.1 μV/m at 30 meters at 13.56 MHz. Minimum margin of compliance of the fundamental is 2 dB. Maximum field strength of spurious emissions is -30 dBμV/m* or 0.000632 μV/m at 30 meters at 27.12 MHz. Minimum margin of compliance of the spurious emission is 59 dB. No unwanted emissions exceed the level of the fundamental.

*****Extrapolated levels using a 40 dB/decade falloff as indicated by the measurements.

Test location

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

Test distance

■ - 1 meter
■ - 3 meters
■ - 10 meters

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02517	HFH2-Z2	Polarad	Loop Antenna	879285/036	29-Jul-11
OWLE02532	ESHS-10	Rohde & Schwarz	EMI Receiver	828178/006	06-Oct-11

Test limit

Frequency (MHz)	Field strength μV/m	Measurement distance (m)
0.009-0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30	30	30

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Data, dBμV/m

Frequency (MHz)	Detector	Distance 1 m	Distance 3 m	10 m	dBμV/m 30 m	μV/m 30 m	Limit dBμV/m 30 m	Limit μV/m 30 m	Delta (dB)
13.56	QP		68	48	28*	25.1*	29.5	30	-2
27.12	QP	30	nf	nf	-30*	0.000632*	29.5	30	-59.5

* Extrapolated value using 40 dB per decade fall off as indicated by measurements
nf = noise floor No other signals detected up to 30 MHz.

Radiated emissions in the frequency range of 10 kHz to 30 MHz, including the fundamental transmit signal, are measured using a receiver capable of quasi-peak/average/peak measurements and a magnetic loop antenna. The transmitter and loop antenna are rotated through 3 orthogonal axes in order to determine the maximum emission levels. If the signal cannot be measured at the specified limit distance, measurements are recorded at multiple distances nearer to the device and the final level mathematically extrapolated. Measurements between 150 kHz and 30 MHz are made with a 9 kHz resolution bandwidth. Measurements between 9 kHz and 150 kHz are made with a 200 Hz resolution bandwidth.

Radiated Emissions 30 - 1000 MHz

FCC 15.209(c), FCC 15.209(f), IC RSS-210 2.5, RSS-Gen 7.2.5

Test summary

The requirements are: ■ - MET ☐ - NOT MET

Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 8.3. Maximum spurious emission below 135.6 MHz is 40.84 dBμV/m (110 μV/m) at 3 meters at 135.6 MHz. Minimum margin of compliance is 2.66 dB. Maximum spurious emission of incorporated digital device above 135.6 MHz and below 1000 MHz is 52.86 dBμV/m (440 μV/m) at 3 meters at 311.898 MHz. Minimum margin of compliance is 3.54 dB to extrapolated 3 meter limit. No radiated emissions were detected from the receiver.

Test limits

Transmitter and 15.205 restricted bands

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Incorporated digital device/Receiver – Class A device

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)	Field strength @ 3 m (μV/m)
30 - 88	90	39	10	300
88 - 216	150	43.5	10	500
216 - 960	210	46.4	10	700
Above 960	300	49.5	10	1000

The emission limits shown in the above tables are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, *e.g.*, see §§ 15.250, 15.252, 15.255, and 15.509–15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with a 120 kHz / 6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz RBW/VBW / 6 dB bandwidth and peak detection, 1 MHz RBW/ 10 Hz VBW for average detection. Table top equipment is placed on a non-conductive support 80 cm above the ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT is rotated 360 degrees. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB / decade (inverse linear-distance for field strength measurements).

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

Test distance
■ - 3 meters

Test Equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
OWLE03202	EM-6917B	Electro-Metrics	Biconicalog Periodic	101	28-May-11
WRLE02684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	28-May-11
NBLE03196	8566B	Hewlett-Packard	Spectrum Analyzer	2240A01856	19-Oct-11
NBLE03195	85662A	Hewlett-Packard	Analyzer Display	2648A13518	19-Oct-11
WRLE10616	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	QA0746005	Code B 25-Oct-11
WRLE02670	8447D	Hewlett-Packard	Preamplifier	2443A03954	Code B 15-Feb-11
WRLE02517	HFH2-Z2	Polarad	Loop Antenna	879285/036	29-Jul-11
OWLE02532	ESHS-10	Rohde & Schwarz	EMI Receiver	828178/006	06-Oct-11

Cal Code B = Calibration verification performed internally.

Test data - See following pages

Measurement summary for limit1: FCC 15.209 to 135.6MHz (Qp) and restricted bands of 15.205 – 3 meters

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC 15.209 to 135.6MHz	FINAL (uV / m)
135.6 MHz	59.1 Qp	1.04 / 8.07 / 27.37 / 0.0	40.84	V / 1.00 / 90	-2.66	110
108.48 MHz	57.55 Qp	0.93 / 9.07 / 27.43 / 0.0	40.12	V / 1.00 / 0	-3.38	
122.04 MHz	52.2 Qp	0.99 / 8.78 / 27.4 / 0.0	34.56	V / 1.00 / 270	-8.94	
131.999 MHz	47.6 Qp	1.03 / 8.18 / 27.38 / 0.0	29.43	V / 1.00 / 0	-14.07	
67.8 MHz	41.3 Qp	0.64 / 9.35 / 27.52 / 0.0	23.77	V / 1.00 / 270	-16.23	
81.36 MHz	42.8 Qp	0.75 / 7.51 / 27.49 / 0.0	23.57	V / 1.00 / 90	-16.43	
66.0 MHz	40.5 Qp	0.63 / 9.8 / 27.52 / 0.0	23.41	V / 1.00 / 0	-16.59	

Measurement summary for limit1: FCC-A <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-A <1GHz 3m	FINAL (uV / m)
311.898 MHz	64.96 Qp	1.64 / 13.51 / 27.25 / 0.0	52.86	H / 1.00 / 98	-3.54	440
339.018 MHz	63.78 Qp	1.72 / 14.37 / 27.2 / 0.0	52.66	H / 1.00 / 103	-3.74	
528.008 MHz	57.06 Qp	2.22 / 17.98 / 26.88 / 0.0	50.38	V / 1.00 / 125	-6.02	
474.618 MHz	55.44 Qp	2.09 / 17.13 / 26.97 / 0.0	47.68	V / 1.00 / 355	-8.72	
203.412 MHz	60.16 Qp	1.31 / 10.38 / 27.32 / 0.0	44.53	V / 1.00 / 291	-8.97	
257.66 MHz	60.25 Qp	1.47 / 12.29 / 27.34 / 0.0	46.67	H / 1.00 / 270	-9.73	
284.778 MHz	59.1 Qp	1.55 / 12.65 / 27.3 / 0.0	46.01	H / 1.00 / 90	-10.39	
189.858 MHz	58.72 Qp	1.26 / 10.44 / 27.37 / 0.0	43.05	V / 1.00 / 277	-10.45	
420.378 MHz	54.9 Qp	1.95 / 16.14 / 27.06 / 0.0	45.93	H / 1.00 / 270	-10.47	
350.0 MHz	56.55 Qp	1.75 / 14.74 / 27.18 / 0.0	45.86	H / 1.00 / 270	-10.54	
660.003 MHz	50.56 Qp	2.55 / 19.5 / 26.76 / 0.0	45.85	V / 1.00 / 129	-10.55	
216.978 MHz	59.93 Qp	1.35 / 10.76 / 27.35 / 0.0	44.68	V / 2.10 / 194	-11.72	
230.538 MHz	58.9 Qp	1.39 / 11.27 / 27.39 / 0.0	44.17	H / 1.00 / 270	-12.23	
792.003 MHz	45.2 Qp	2.88 / 21.44 / 26.31 / 0.0	43.21	V / 1.00 / 270	-13.19	
693.003 MHz	46.43 Qp	2.63 / 20.03 / 26.65 / 0.0	42.44	H / 1.15 / 0	-13.96	
250.003 MHz	55.95 Qp	1.45 / 12.01 / 27.36 / 0.0	42.05	H / 1.00 / 90	-14.35	
400.0 MHz	51.3 Qp	1.9 / 15.77 / 27.1 / 0.0	41.87	H / 1.00 / 270	-14.53	
447.498 MHz	50.0 Qp	2.02 / 16.64 / 27.02 / 0.0	41.64	V / 1.00 / 180	-14.76	
225.007 MHz	56.52 Qp	1.38 / 11.06 / 27.4 / 0.0	41.56	H / 1.38 / 120	-14.84	
244.098 MHz	55.4 Qp	1.43 / 11.79 / 27.37 / 0.0	41.25	V / 1.00 / 180	-15.15	
957.004 MHz	41.25 Qp	3.16 / 22.92 / 26.32 / 0.0	41.01	V / 1.00 / 0	-15.39	
231.001 MHz	55.5 Qp	1.39 / 11.29 / 27.39 / 0.0	40.79	H / 1.00 / 90	-15.61	
300.0 MHz	52.6 Qp	1.6 / 13.13 / 27.27 / 0.0	40.06	H / 1.00 / 270	-16.34	
162.738 MHz	53.75 Qp	1.15 / 8.68 / 27.31 / 0.0	36.26	H / 1.00 / 270	-17.24	
627.002 MHz	43.75 Qp	2.47 / 19.63 / 26.71 / 0.0	39.14	V / 1.00 / 0	-17.26	
264.001 MHz	51.95 Qp	1.49 / 12.5 / 27.33 / 0.0	38.61	H / 1.00 / 270	-17.79	
176.298 MHz	51.45 Qp	1.21 / 9.54 / 27.35 / 0.0	34.84	H / 1.00 / 90	-18.66	
825.0 MHz	39.05 Qp	2.94 / 21.6 / 26.08 / 0.0	37.52	H / 1.00 / 90	-18.88	
325.0 MHz	49.05 Qp	1.68 / 13.93 / 27.23 / 0.0	37.42	H / 1.00 / 270	-18.98	
550.0 MHz	42.95 Qp	2.28 / 18.4 / 26.84 / 0.0	36.78	V / 1.00 / 270	-19.62	
450.0 MHz	45.0 Qp	2.03 / 16.68 / 27.01 / 0.0	36.69	V / 1.00 / 270	-19.71	

Occupied bandwidth
RSS-Gen 4.6.1

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Test was performed in accordance with the article “The Measurement of Occupied Bandwidth” by Industry Canada’s certification bureau.
Occupied bandwidth = 9 Hz

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

Test equipment

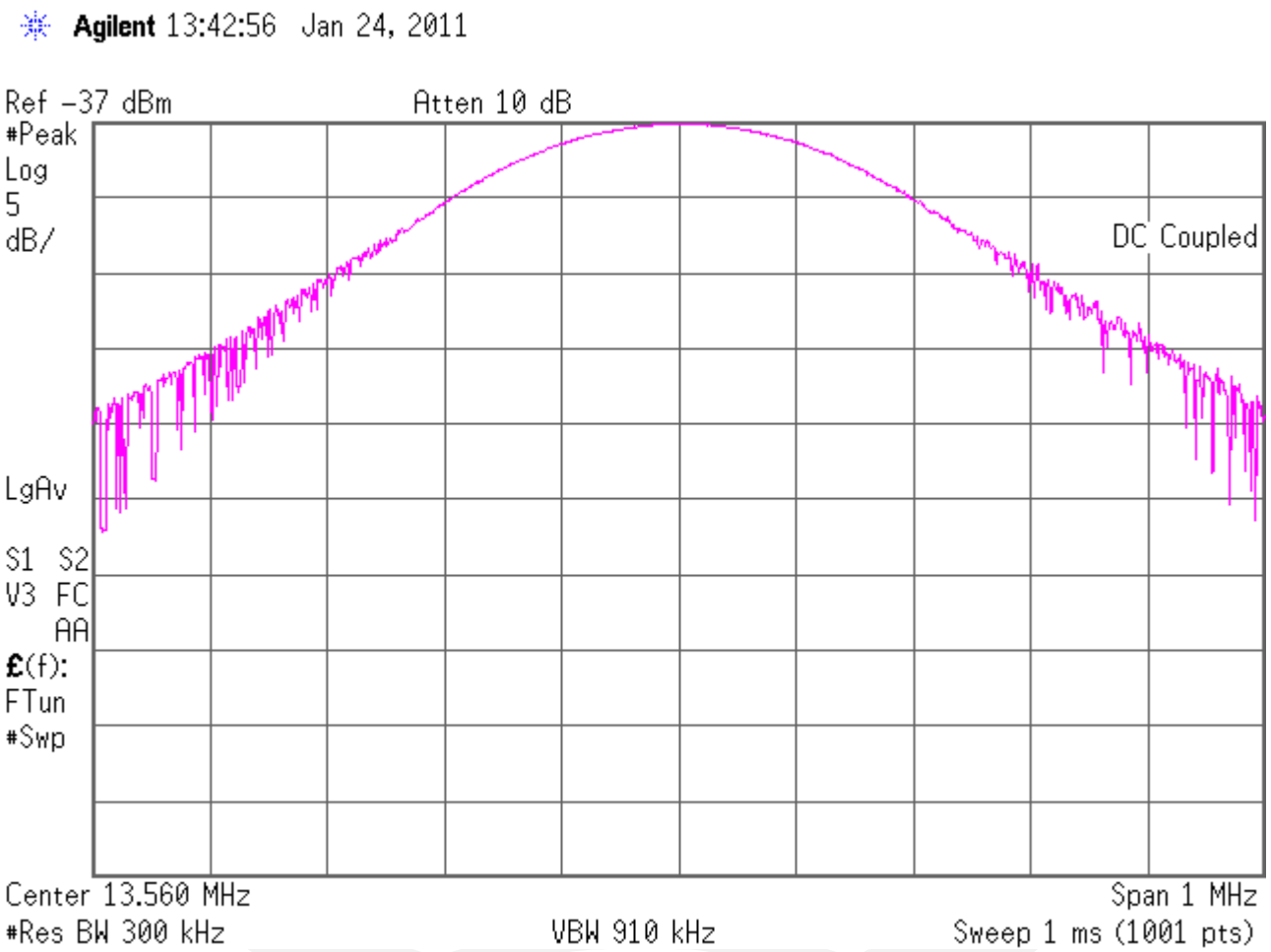
TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
WRLE02517	HFH2-Z2	Polarad	Loop Antenna	879285/036	29-Jul-11
WRLE03371	E4440A	Agilent	Spectrum Analyzer	MY43362222	09-Aug-11

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

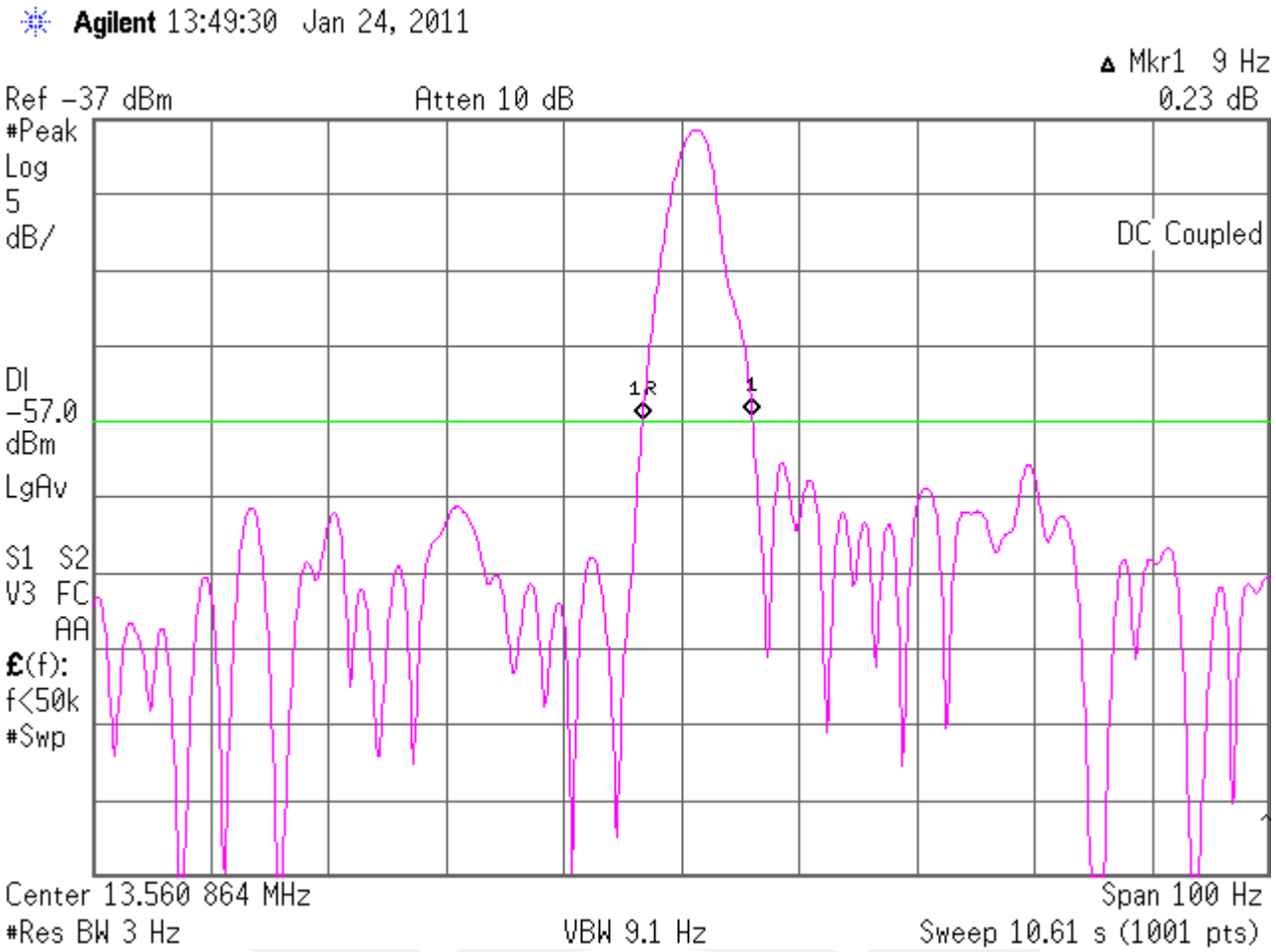
Test limit
No limit specified

Test data
See following pages

99% Occupied bandwidth
1 of 2



99% Occupied bandwidth
2 of 2



Conducted Emissions - AC Power Lines
FCC 15.207(a), IC RSS-Gen 7.2.4

Test summary
The requirements are: ■ - MET ☐ - NOT MET
Testing was performed in accordance with the test procedure of ANSI C63.4 2003, clause 7.2
Minimum margin of compliance is 8.9 dB at 450 kHz – quasi-peak
Minimum margin of compliance is 5.8 dB at 27.26 MHz – average

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

Test equipment used:

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02079	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN (Blue tape*)	1329	Code B 23-Mar-11
OWLE02532	ESHS-10	Rohde & Schwarz	EMI Receiver	828178/006	06-Oct-11

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

Test limits, dBμV

Frequncy (MHz)	Quasi Peak	Average
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

*Decreases with the logarithm of the frequency

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth (9 kHz resolution bandwidth) and quasi-peak/average detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions.

Test data
See following pages

Measurement summary for limit1: FCC 15.207 .15-30MHz QP (Qp)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 .15-30MHz QP
3.12 MHz	42.95 Qp	0.43 / 0.01 / 0.0 / 0.0	43.39	L1	-12.61
3.09 MHz	42.95 Qp	0.42 / 0.01 / 0.0 / 0.0	43.38	N	-12.62
909.0 kHz	42.95 Qp	0.23 / 0.1 / 0.0 / 0.0	43.28	N	-12.72
859.0 kHz	42.95 Qp	0.23 / 0.1 / 0.0 / 0.0	43.28	L1	-12.72
818.0 kHz	42.95 Qp	0.22 / 0.1 / 0.0 / 0.0	43.27	N	-12.73
687.0 kHz	42.95 Qp	0.21 / 0.1 / 0.0 / 0.0	43.26	N	-12.74
742.0 kHz	42.95 Qp	0.21 / 0.1 / 0.0 / 0.0	43.26	N	-12.74
716.0 kHz	42.95 Qp	0.21 / 0.1 / 0.0 / 0.0	43.26	L1	-12.74
761.0 kHz	42.95 Qp	0.21 / 0.1 / 0.0 / 0.0	43.26	L1	-12.74
629.0 kHz	42.95 Qp	0.2 / 0.1 / 0.0 / 0.0	43.25	L1	-12.75
1.008 MHz	40.44 Qp	0.24 / 0.1 / 0.0 / 0.0	40.78	N	-15.22
3.06 MHz	39.55 Qp	0.42 / 0.01 / 0.0 / 0.0	39.98	N	-16.02
1.025 MHz	39.12 Qp	0.25 / 0.1 / 0.0 / 0.0	39.46	L1	-16.54
1.528 MHz	38.95 Qp	0.3 / 0.0 / 0.0 / 0.0	39.25	N	-16.75
585.0 kHz	38.69 Qp	0.19 / 0.1 / 0.0 / 0.0	38.98	N	-17.02
1.088 MHz	38.08 Qp	0.25 / 0.08 / 0.0 / 0.0	38.42	N	-17.58
1.31 MHz	38.02 Qp	0.28 / 0.04 / 0.0 / 0.0	38.34	L1	-17.66
526.0 kHz	36.82 Qp	0.18 / 0.1 / 0.0 / 0.0	37.1	N	-18.9

Measurement summary for limit2: FCC 15.207 .15-30MHz Avg (Av)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 FCC 15.207 .15-30MHz Avg
3.09 MHz	40.96 Av	0.42 / 0.01 / 0.0 / 0.0	41.39	N	-4.61
818.0 kHz	34.5 Av	0.22 / 0.1 / 0.0 / 0.0	34.82	N	-11.18
687.0 kHz	33.73 Av	0.21 / 0.1 / 0.0 / 0.0	34.04	N	-11.96
1.31 MHz	33.34 Av	0.28 / 0.04 / 0.0 / 0.0	33.66	L1	-12.34
742.0 kHz	32.57 Av	0.21 / 0.1 / 0.0 / 0.0	32.88	N	-13.12
252.0 kHz	35.9 Av	0.14 / 0.1 / 0.0 / 0.0	36.14	N	-15.55
1.008 MHz	28.31 Av	0.24 / 0.1 / 0.0 / 0.0	28.65	N	-17.35
546.0 kHz	27.57 Av	0.19 / 0.1 / 0.0 / 0.0	27.86	L1	-18.14
1.952 MHz	27.37 Av	0.34 / 0.0 / 0.0 / 0.0	27.71	L1	-18.29
1.249 MHz	26.38 Av	0.27 / 0.05 / 0.0 / 0.0	26.7	N	-19.3
1.541 MHz	26.37 Av	0.31 / 0.0 / 0.0 / 0.0	26.68	L1	-19.32
1.747 MHz	26.07 Av	0.32 / 0.0 / 0.0 / 0.0	26.39	N	-19.61
909.0 kHz	26.04 Av	0.23 / 0.1 / 0.0 / 0.0	26.37	N	-19.63
1.11 MHz	25.77 Av	0.26 / 0.08 / 0.0 / 0.0	26.1	N	-19.9

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Large Test Site

Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.

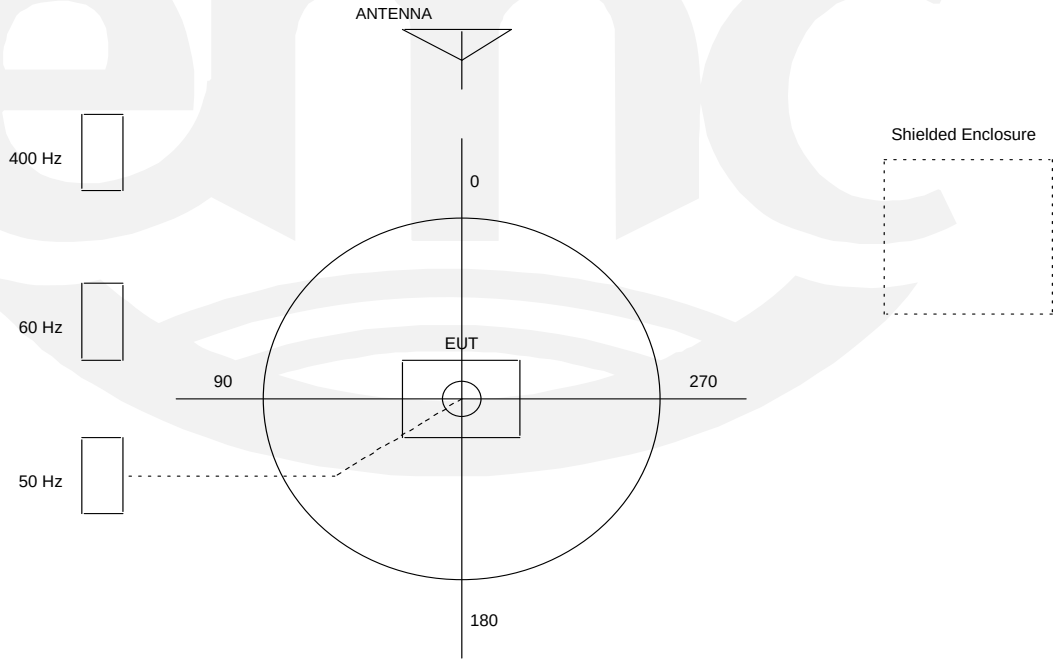
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.

3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.

4. The circle is a 6.7 meter diameter turntable.

5. A ground plane is in the plane of this sheet.

6. The test sample is shown in the azimuthal position representing zero degrees.



Test-setup photo(s):
General Field Strength Limits 0.009 – 30 MHz

Test-setup photo(s):
Radiated Emissions 30 - 1000 MHz

Test-setup photo(s):
Radiated Emissions 30 - 1000 MHz

Test-setup photo(s):
Conducted Emissions, AC lines, 150 kHz - 30 MHz

Equipment Under Test (EUT) Test Operation Mode:

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

☐ - Standby

☐ - Test program (H - Pattern)

☐ - Test program (color bar)

☐ - Test program (customer specific)

☐ - Practice operation

■ - Normal operating mode

Configuration of the device under test:

■ - See Appendix A and test setup photos

☐ - See Product Information Form(s) in Appendix B

DEVIATIONS FROM STANDARD:
None.

GENERAL REMARKS:
None

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 and the device under test does fulfill the general approval requirements.
☐ - **not** met and the device under test does **not** fulfill the general approval requirements..

EUT Received Date:	11 January 2011
Condition of EUT:	Normal
Testing Start Date:	11 January 2011
Testing End Date:	17 February 2011

TÜV SÜD AMERICA INC

Tested by:

Greg S Jakubowski
EMC Test Engineer

Approved by:

Joel T Schneider
Senior EMC Engineer

Appendix A

Constructional Data Form

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:	Datacard Group		
Address:	11111 Bren Road West		
	Minnetonka, MN 55343		
Contact:	Steve Fitzsimmons	Position:	Electrical Engineer
Phone:	952 988 1838	Fax:	952 988 2658
E-mail Address:	steve_fitzsimmons@datacard.com		

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

EUT Description	Card Printer
EUT Name	CD800
Model No.:	PX20 Serial No.: A00290
Product Options:	Magstripe, input hopper, dual smart card
Configurations to be tested:	Printing dual sided Color cards with mag stripe

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:

Modifications made during test:

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

- ☒ EMC Directive 2004/108/EC (EMC) — Std: EN55022:1998 / EN55024
- ☐ Machinery Directive 89/392/EEC (EMC) — Std:
- ☐ Medical Device Directive 93/42/EEC (EMC) — Std:
- ☐ Vehicle Directive: ☐ 2001/3/EC (EMC) ☐ 2004/104/EC (EMC) — ☐ Other Vehicle Std:
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☒ FCC: Class ☒ A ☐ B Part
- ☒ VCCI: Class ☒ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B (Separate Report)
- ☒ Canada: Class ☒ A ☐ B
- ☒ Australia: Class ☒ A ☐ B
- ☒ Other: RTTE Directive EN301 489-3: 2000

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

- ☐ Attestation of Conformity (AoC)*
- ☐ Statement of Compliance (previously 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

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 SÜD 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: 20" Width: 8" Height: 9" Weight: 10lbs

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: 100-240vac 50/60hz (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: 1

Current (Amps/phase(max)): inrush Current (Amps/phase(nominal)): 1.5 amps

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

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

EUT Power Cable

☐ Permanent OR ☒ Removable Length (in meters): 2

☐ Shielded OR ☐ Unshielded

☐ Not Applicable

EMC Test Plan and Constructional Data Form

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*	☒	☐
USB	☐	☒	☐	☒	1	☒	☐	foil	na	typeA-B	USB 2.0	2	☒	☐
Ethernet	☐	☒	☒	☐	1	☐	☒	10/100baseT	na	RJ45	magnetics	NA	☒	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: D2.1.22-0

Description: SVT firmware

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. Continous printing and mag stripe of dual side color cards

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 #

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 #*
Desktop PC	SSE2500MT64	SFST0072121	E186194
Keyboard	EO3601QUS201-C	J014405380	E139948JZ
Monitor	VCDTS21378-2M	E783732785	GSS15015
Mouse	ECM-S3902	1487209	EW4ECM-S3902

Oscillator Frequencies

Manufacturer	*Frequency*	*Derived Frequency*	*Component # / Location*	*Description of Use*
	33Mhz		Y3, print control board	Oscillator for system clock generation
	13.56Mhz		Y1, print control board	RFID communication clock
		22Mhz	U24, print control board	TPH logic control
	25Mhz		Y4, print control board	Ethernet clock
	48MHz		Y2, print control board	USB clock

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
Cincon	TRG70A240		☒ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Component # / Location*

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

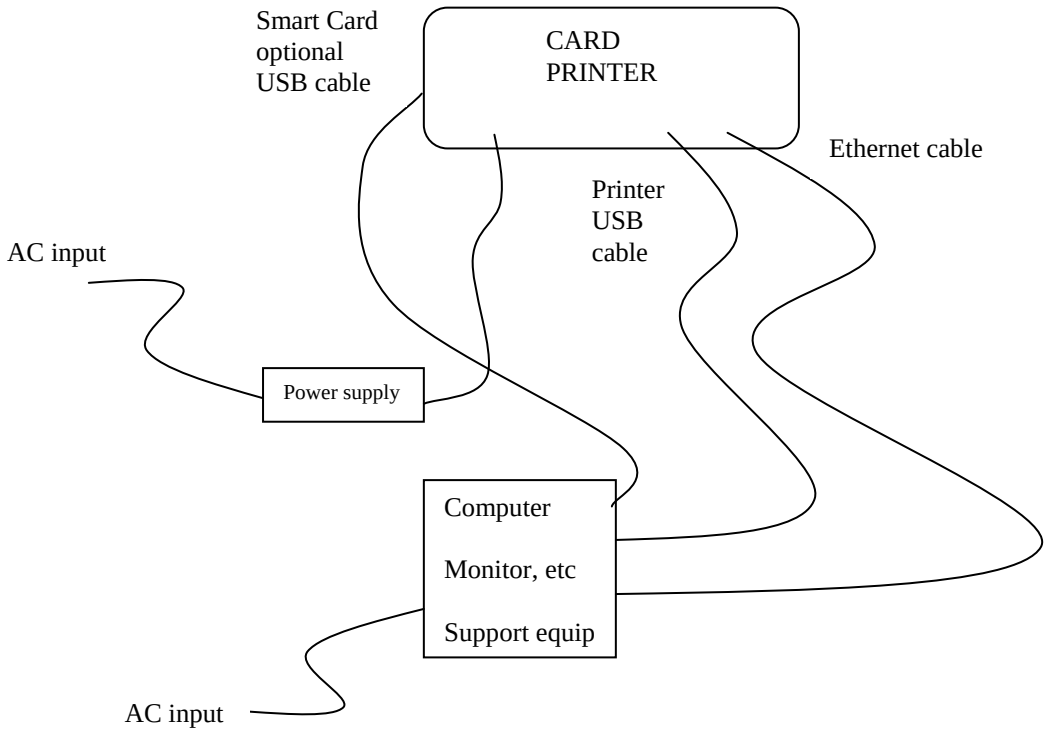
PLEASE ENTER NAMES BELOW (INSERT ELECTRONIC SIGNATURE IF POSSIBLE)

Authorization (Signature Required if a Third Party Certification is checked on pg 1)

Customer authorization to perform tests according to this test plan.	Date
Steve Fitzsimmons	12/6/10
Test Plan/CDF Prepared By (please print)	Date

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.



Authorization Signatures

Customer authorization to perform tests according to this test plan.	Date
Steve Fitzsimmons	12/6/2010
Test Plan/CDF Prepared By (please print)	Date