TEST REPORT

FCC Part 15 Subpart C Section 15.225
IC RSS-210 Issue 8
IC RSS-Gen Issue 3

MANUFACTURER'S NAME	Datacard Group 11111 Bren Road West Minnetonka MN 55343
PRODUCT NAME	RFID module
MODEL NUMBER(S) TESTED	506241
SERIAL NUMBER(S) TESTED	E6215130219
PRODUCT DESCRIPTION	13.56 MHz RFID module
TEST REPORT NUMBER	NC1304943.1
TEST DATE(S)	28 May - 21 June 2013

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 Section 15.225 “Operation within the band 13.110-14.010 MHz” and Industry Canada RSS-210 Issue 8 “Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment” and Industry Canada RSS-Gen Issue 3 “General Requirements and Information for the Certification of Radio Apparatus”.

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: 26 August 2013

Location: Taylors Falls MN
USA

Greg Jakubowski
Senior EMC Technician

Joel T Schneider
Senior EMC Engineer

Not Transferable

EMC TEST REPORT

Test Report No.	**NC1304943.1**	Date of issue:	26 August 2013
Product Name	RFID module		
Model(s) Tested	506241		
Serial No(s) Tested	E6215130219		
Product Description	13.56 MHz RFID module		
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.

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

REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	29	26 August 2013	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 15.225 Paragraphs (a), (b), (c), (d), (e)
IC RSS-210 Issue 8 Section A2.6
IC RSS-Gen Issue 3 Sections 4.6.1

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 23°C
Atmospheric pressure	: 99kPa
Relative Humidity	: 40%

POWER SUPPLY UTILIZED
Power supply system : 5 VDC

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

SIGN EXPLANATIONS
☐ - not applicable
■ - applicable

In band limits

FCC 15.225(a), (b), (c), IC RSS-210 A2.6(a), (b), (c)

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 32.2 dBμV/m or 40.7 μV/m at 30 meters at 13.56 MHz (limit 15848 μV/m). This level is below the minimum emission mask level, so the mask limit is met.
No unwanted emissions exceed the level of the 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 meter
■ - 1 meters
■ - 3 meters
■ - 10 meter

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
NBLE03366	E4440A	Agilent	Spectrum Analyzer PSA	MY42510427	31 Oct 13

Test limit

Frequency (MHz)	Field strength μV/m	Measurement distance (m)
13.553-13.567	15848	30
13.41-13.553 13.567-13.71	334	30
13.11-13.41 13.71-14.01	106	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.

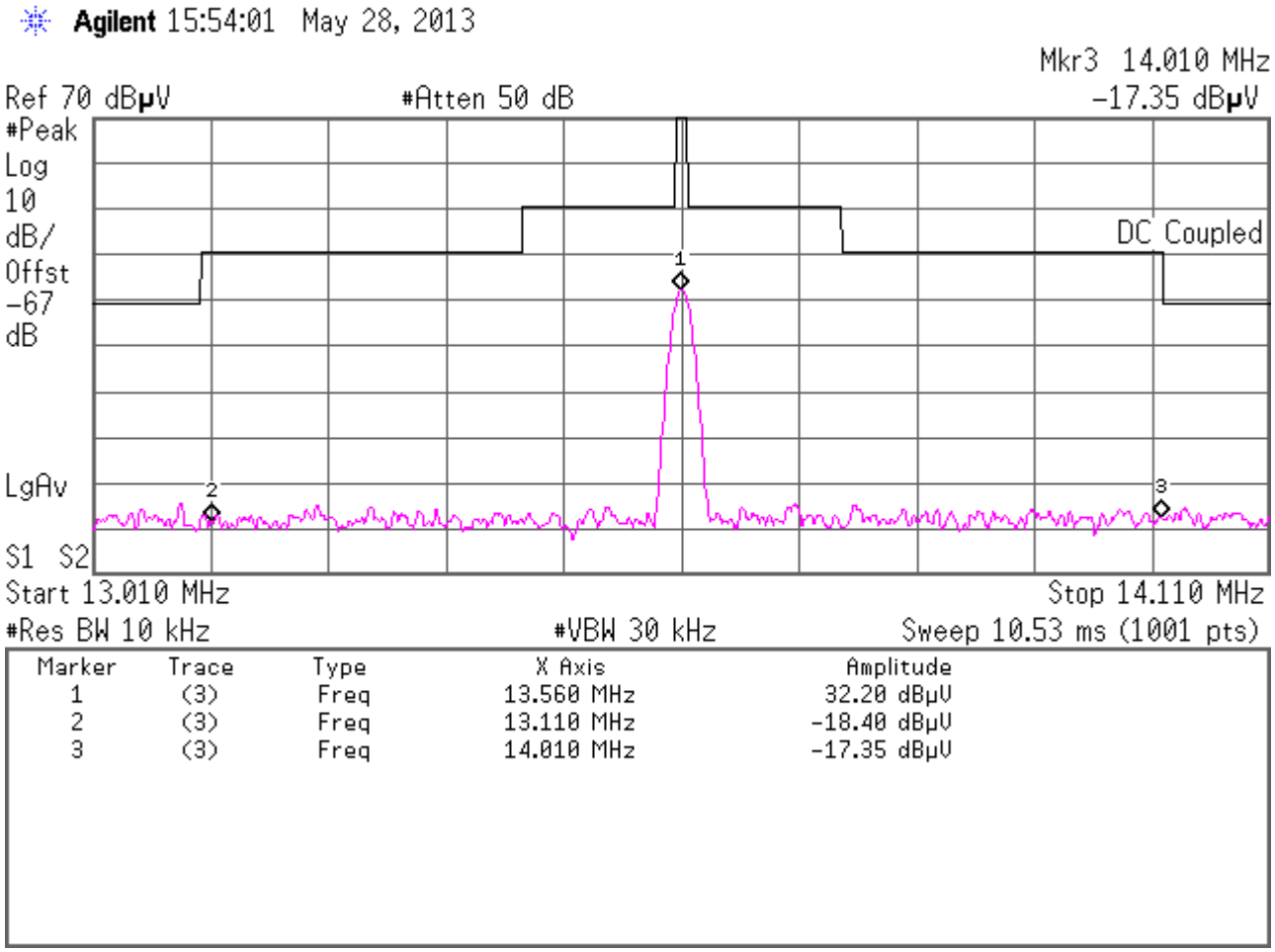
Test Data

See following page

Frequency (MHz)	Field strength dBµV/m	Field strength µV/m	Measurement distance (m)
13.56	96.3		1
13.56	72.2		3
13.56	52.4		10
13.56	32.2*	40.7*	30*

*extrapolated using 40 dB/decade falloff as indicated by the measurements.

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.



Out of band limits
FCC 15.225(d), IC RSS-210 A2.6(d)

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.
No spurious emissions were detected within 10 dB of the limit.

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
NBLE02096	LP105	Empire	Loop Antenna	3000	Code Y
OWLE02532	ESHS-10	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	828178/006	21-Mar-14
WRLE03995	EM-6917B	Electro-Metrics	Biconicalog Periodic	151	17-Jun-14
WRLE02670	8447D	Hewlett-Packard	Preamplifier	2443A03954	Code B 11-Jan-14
WRLE02673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	26-Jun-14
WRLE03294	8566B	Hewlett-Packard	Spectrum Analyzer	2349A03098	26-Jun-14
WRLE02684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	26-Jun-14

Cal Code B = Calibration verification performed internally.

Limit

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
.009-.490	2400/F(kHz)		300
.49-1.705	24000/F(kHz)		30
1.705-30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

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).

Frequency tolerance
FCC 15.225(e), IC RSS-210 A2.6

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.

Test location
New Brighton Lab environmental chamber

Test Equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
NBLE03366	E4440A	Agilent	Spectrum Analyzer PSA	MY42510427	31 Oct 13
NBLE11043	3PN1520B	Staco	Transformer variable	11043	Code Y
NBLE03310	189	Fluke	Multimeter True RMS TA7	82740215	02 Nov 13
NBLE02238	SH27	Envirotronics	27 Cu Ft Temperature/Humidity	09963482-S	29 Oct 13

Cal Code B = Calibration verification performed internally.

Limit
±0.01% allowed (1.356 kHz)

Test data

temp	voltage		Fc
deg. C			MHz
-20			13.5600
-10			13.5600
0			13.5600
10			13.5600
20			13.5600
30			13.5600
40			13.5600
50			13.5600
20	85%		13.5600
20	115%		13.5600
			±0.01% allowed (1.356 kHz)

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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 = 28 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

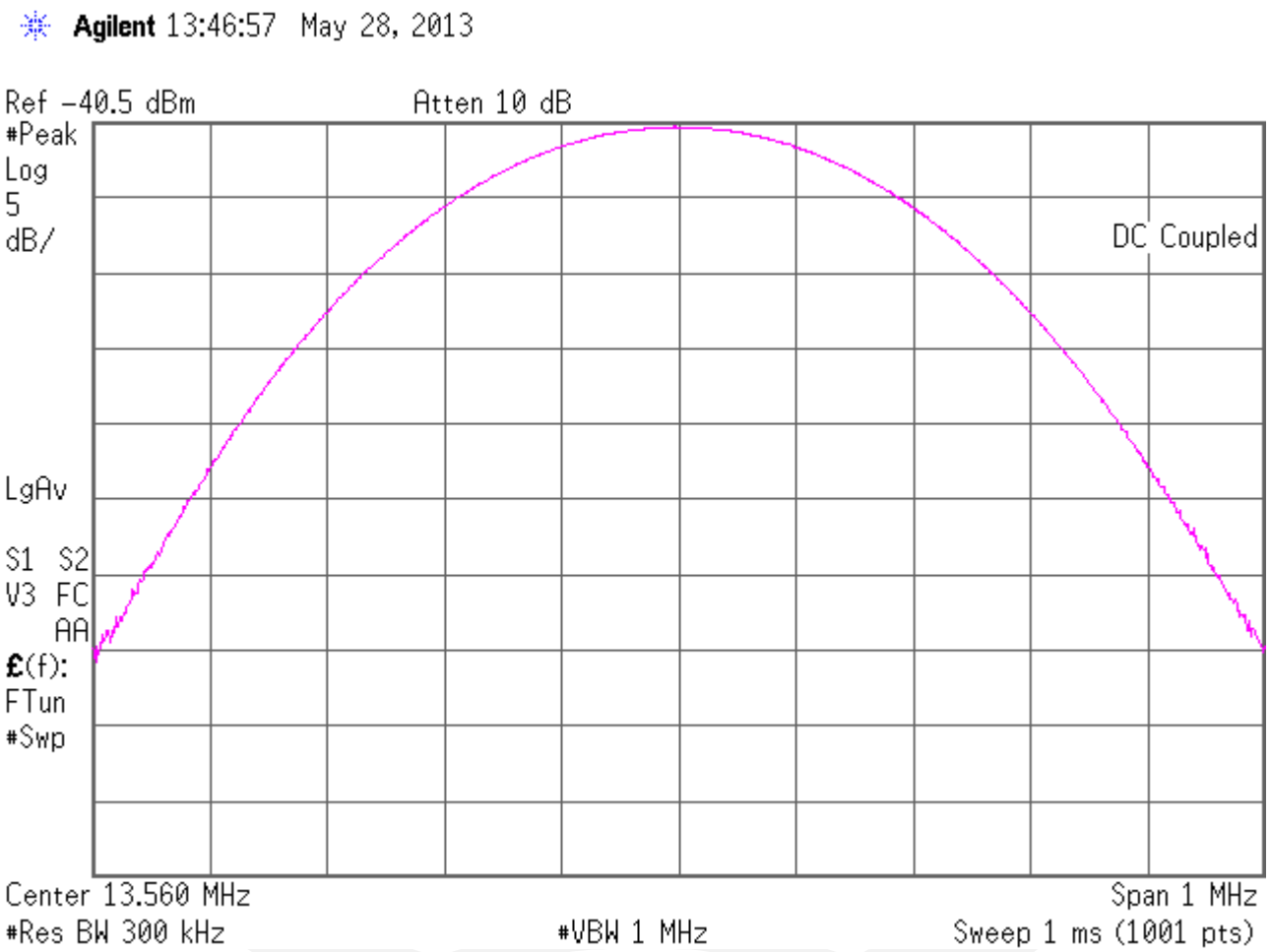
TUV ID	Model	Manufacturer	Description	Serial	Cal Due
NBLE03366	E4440A	Agilent	Spectrum Analyzer PSA	MY42510427	31 Oct 13

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

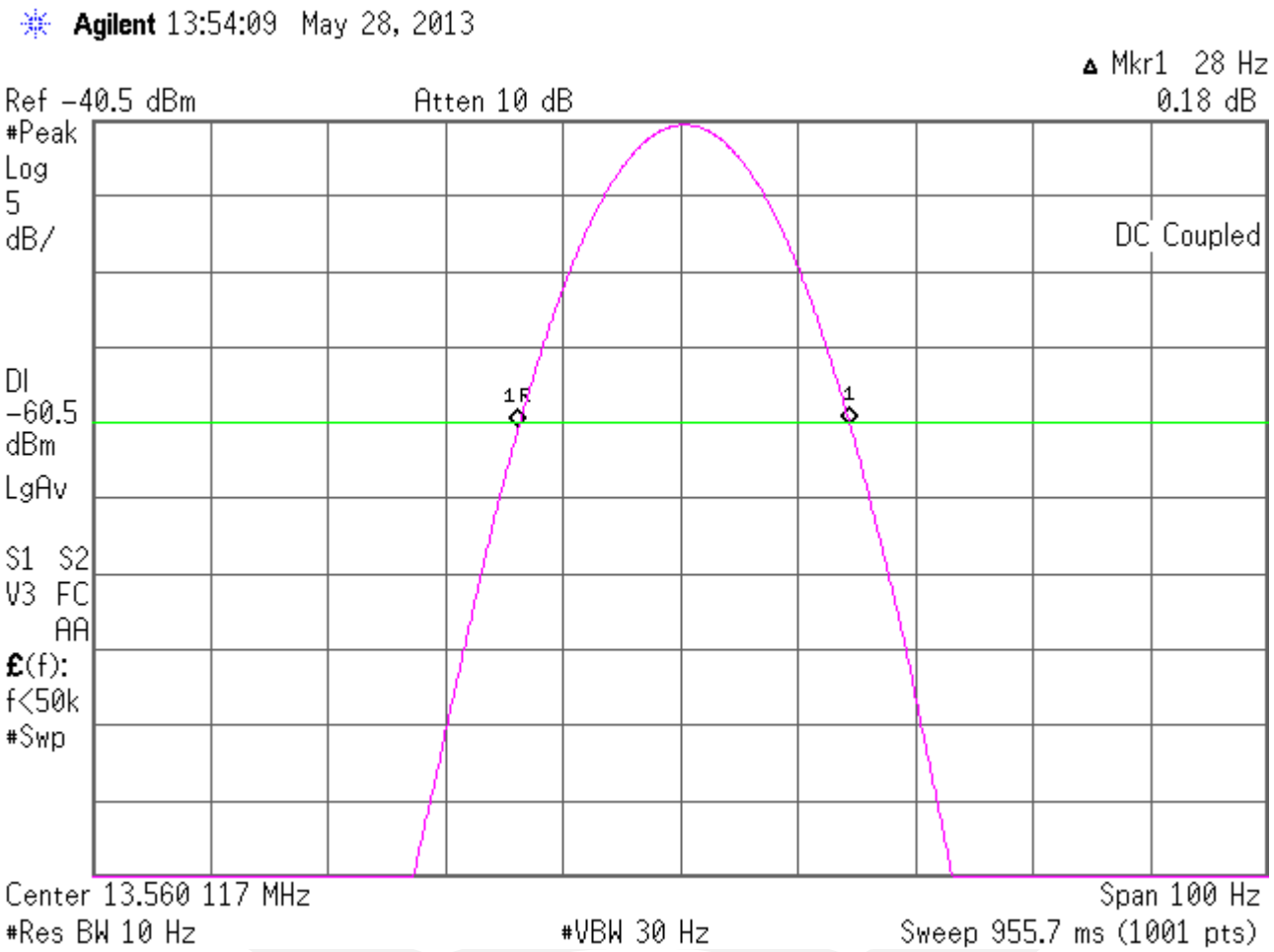
Test limit
Not specified

Test data
See following pages

99% Occupied bandwidth
1 of 2



99% Occupied bandwidth
2 of 2



AC power line conducted emissions
FCC 15.207, 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 8.2.2.

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	Manufacturer	Description	Serial	Cal Due
WRLE10946	FCC-LISN-50-25-2-10	Fischer Custom Comm	LISN	120310	30-May-14
OWLE02532	ESHS-10	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	828178/006	21-Mar-14

Test limit

Frequency of emission (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.

Test Data
See following page

CONDUCTED EMISSIONS

TÜV PRODUCT SERVICE

Test Report #:	NC1304943 Run 3	Test Area:	LTS			
EUT Model #:	506241-001	Date:	5/28/2013			
EUT Serial #:	E6215130219	EUT Power:	110V / 60Hz	Temperature:	23.0	°C
Test Method:	FCC 15.207			Air Pressure:	99.0	kPa
Customer:	Datacard			Rel. Humidity:	40.0	%
EUT Description:	Power supply for RFID Desktop Module (13.56 MHz)					
Notes:						
Data File Name:	4943.dat			Page:	1 of 4	

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 qp	DELTA2 FCC 15.207 avg
150.0 kHz	29.61 Qp	0.11 / -0.25 / 0.0 / 0.0	29.47	L1	-36.53	n/a
471.0 kHz	38.14 Qp	0.14 / -0.16 / 0.0 / 0.0	38.12	L1	-18.37	n/a
904.0 kHz	23.52 Qp	0.18 / -0.03 / 0.0 / 0.0	23.67	L1	-32.33	n/a
1.46 MHz	14.12 Qp	0.21 / 0.0 / 0.0 / 0.0	14.33	L1	-41.67	n/a
7.01 MHz	9.96 Qp	0.41 / 0.0 / 0.0 / 0.0	10.37	L1	-49.63	n/a
13.56 MHz	49.0 Qp	0.55 / 0.02 / 0.0 / 0.0	49.57	L1	-10.43	n/a
16.9 MHz	28.67 Qp	0.61 / 0.03 / 0.0 / 0.0	29.32	L1	-30.68	n/a
18.02 MHz	27.65 Qp	0.63 / 0.04 / 0.0 / 0.0	28.32	L1	-31.68	n/a
19.16 MHz	17.43 Qp	0.64 / 0.05 / 0.0 / 0.0	18.12	L1	-41.88	n/a
23.67 MHz	14.44 Qp	0.7 / 0.07 / 0.0 / 0.0	15.2	L1	-44.8	n/a
28.15 MHz	10.97 Qp	0.77 / 0.09 / 0.0 / 0.0	11.83	L1	-48.17	n/a
150.0 kHz	25.17 Av	0.11 / -0.25 / 0.0 / 0.0	25.03	L1	n/a	-30.97
471.0 kHz	36.8 Av	0.14 / -0.16 / 0.0 / 0.0	36.78	L1	n/a	-9.71
904.0 kHz	19.24 Av	0.18 / -0.03 / 0.0 / 0.0	19.39	L1	n/a	-26.61
1.46 MHz	8.75 Av	0.21 / 0.0 / 0.0 / 0.0	8.96	L1	n/a	-37.04
7.01 MHz	2.58 Av	0.41 / 0.0 / 0.0 / 0.0	2.99	L1	n/a	-47.01
13.56 MHz	45.0 Av	0.55 / 0.02 / 0.0 / 0.0	45.57	L1	n/a	-4.43
16.9 MHz	14.78 Av	0.61 / 0.03 / 0.0 / 0.0	15.43	L1	n/a	-34.57
18.02 MHz	1.64 Av	0.63 / 0.04 / 0.0 / 0.0	2.31	L1	n/a	-47.69
19.16 MHz	4.63 Av	0.64 / 0.05 / 0.0 / 0.0	5.32	L1	n/a	-44.68
23.67 MHz	3.92 Av	0.7 / 0.07 / 0.0 / 0.0	4.68	L1	n/a	-45.32
28.15 MHz	4.29 Av	0.77 / 0.09 / 0.0 / 0.0	5.15	L1	n/a	-44.85
150.0 kHz	28.94 Qp	0.11 / -0.25 / 0.0 / 0.0	28.8	N	-37.2	n/a
471.0 kHz	35.02 Qp	0.14 / -0.16 / 0.0 / 0.0	35.0	N	-21.49	n/a
904.0 kHz	15.64 Qp	0.18 / -0.03 / 0.0 / 0.0	15.79	N	-40.21	n/a
1.46 MHz	19.85 Qp	0.21 / 0.0 / 0.0 / 0.0	20.06	N	-35.94	n/a
7.01 MHz	12.94 Qp	0.41 / 0.0 / 0.0 / 0.0	13.35	N	-46.65	n/a
13.56 MHz	48.62 Qp	0.55 / 0.02 / 0.0 / 0.0	49.19	N	-10.81	n/a

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

CONDUCTED EMISSIONS

Test Report #:	NC1304943 Run 3	Test Area:	LTS		
EUT Model #:	506241-001	Date:	5/28/2013		
EUT Serial #:	E6215130219	EUT Power:	110V / 60Hz	Temperature:	23.0 °C
Test Method:	FCC 15.207			Air Pressure:	99.0 kPa
Customer:	Datacard			Rel. Humidity:	40.0 %
EUT Description:	Power supply for RFID Desktop Module (13.56 MHz)				
Notes:					
Data File Name:	4943.dat			Page:	2 of 4

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 qp	DELTA2 FCC 15.207 avg
16.9 MHz	18.31 Qp	0.61 / 0.03 / 0.0 / 0.0	18.96	N	-41.04	n/a
18.02 MHz	6.13 Qp	0.63 / 0.04 / 0.0 / 0.0	6.8	N	-53.2	n/a
19.16 MHz	10.04 Qp	0.64 / 0.05 / 0.0 / 0.0	10.73	N	-49.27	n/a
23.67 MHz	5.81 Qp	0.7 / 0.07 / 0.0 / 0.0	6.57	N	-53.43	n/a
28.15 MHz	1.26 Qp	0.77 / 0.09 / 0.0 / 0.0	2.12	N	-57.88	n/a
150.0 kHz	21.23 Av	0.11 / -0.25 / 0.0 / 0.0	21.09	N	n/a	-34.91
471.0 kHz	34.01 Av	0.14 / -0.16 / 0.0 / 0.0	33.99	N	n/a	-12.5
904.0 kHz	11.27 Av	0.18 / -0.03 / 0.0 / 0.0	11.42	N	n/a	-34.58
1.46 MHz	13.56 Av	0.21 / 0.0 / 0.0 / 0.0	13.77	N	n/a	-32.23
7.01 MHz	6.94 Av	0.41 / 0.0 / 0.0 / 0.0	7.35	N	n/a	-42.65
13.56 MHz	48.36 Av	0.55 / 0.02 / 0.0 / 0.0	48.93	N	n/a	-1.07
16.9 MHz	13.65 Av	0.61 / 0.03 / 0.0 / 0.0	14.3	N	n/a	-35.7
18.02 MHz	-0.16 Av	0.63 / 0.04 / 0.0 / 0.0	0.51	N	n/a	-49.49
19.16 MHz	5.18 Av	0.64 / 0.05 / 0.0 / 0.0	5.87	N	n/a	-44.13
23.67 MHz	1.48 Av	0.7 / 0.07 / 0.0 / 0.0	2.24	N	n/a	-47.76
28.15 MHz	-3.74 Av	0.77 / 0.09 / 0.0 / 0.0	-2.88	N	n/a	-52.88

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

CONDUCTED EMISSIONS

Test Report #:	NC1304943 Run 3	Test Area:	LTS			
EUT Model #:	506241-001	Date:	5/28/2013			
EUT Serial #:	E6215130219	EUT Power:	110V / 60Hz	Temperature:	23.0	°C
Test Method:	FCC 15.207			Air Pressure:	99.0	kPa
Customer:	Datacard			Rel. Humidity:	40.0	%
EUT Description:	Power supply for RFID Desktop Module (13.56 MHz)					
Notes:						
Data File Name:	4943.dat			Page:	3 of 4	

Measurement summary for limit1: FCC 15.207 qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 FCC 15.207 qp
13.56 MHz	49.0 Qp	0.55 / 0.02 / 0.0 / 0.0	49.57	L1	-10.43
471.0 kHz	38.14 Qp	0.14 / -0.16 / 0.0 / 0.0	38.12	L1	-18.37
16.9 MHz	28.67 Qp	0.61 / 0.03 / 0.0 / 0.0	29.32	L1	-30.68
18.02 MHz	27.65 Qp	0.63 / 0.04 / 0.0 / 0.0	28.32	L1	-31.68
904.0 kHz	23.52 Qp	0.18 / -0.03 / 0.0 / 0.0	23.67	L1	-32.33
1.46 MHz	19.85 Qp	0.21 / 0.0 / 0.0 / 0.0	20.06	N	-35.94
150.0 kHz	29.61 Qp	0.11 / -0.25 / 0.0 / 0.0	29.47	L1	-36.53
19.16 MHz	17.43 Qp	0.64 / 0.05 / 0.0 / 0.0	18.12	L1	-41.88
23.67 MHz	14.44 Qp	0.7 / 0.07 / 0.0 / 0.0	15.2	L1	-44.8
7.01 MHz	12.94 Qp	0.41 / 0.0 / 0.0 / 0.0	13.35	N	-46.65
28.15 MHz	10.97 Qp	0.77 / 0.09 / 0.0 / 0.0	11.83	L1	-48.17

Measurement summary for limit2: FCC 15.207 avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 FCC 15.207 avg
13.56 MHz	48.36 Av	0.55 / 0.02 / 0.0 / 0.0	48.93	N	-1.07
471.0 kHz	36.8 Av	0.14 / -0.16 / 0.0 / 0.0	36.78	L1	-9.71
904.0 kHz	19.24 Av	0.18 / -0.03 / 0.0 / 0.0	19.39	L1	-26.61
150.0 kHz	25.17 Av	0.11 / -0.25 / 0.0 / 0.0	25.03	L1	-30.97
1.46 MHz	13.56 Av	0.21 / 0.0 / 0.0 / 0.0	13.77	N	-32.23
16.9 MHz	14.78 Av	0.61 / 0.03 / 0.0 / 0.0	15.43	L1	-34.57
7.01 MHz	6.94 Av	0.41 / 0.0 / 0.0 / 0.0	7.35	N	-42.65
19.16 MHz	5.18 Av	0.64 / 0.05 / 0.0 / 0.0	5.87	N	-44.13
28.15 MHz	4.29 Av	0.77 / 0.09 / 0.0 / 0.0	5.15	L1	-44.85
23.67 MHz	3.92 Av	0.7 / 0.07 / 0.0 / 0.0	4.68	L1	-45.32
18.02 MHz	1.64 Av	0.63 / 0.04 / 0.0 / 0.0	2.31	L1	-47.69

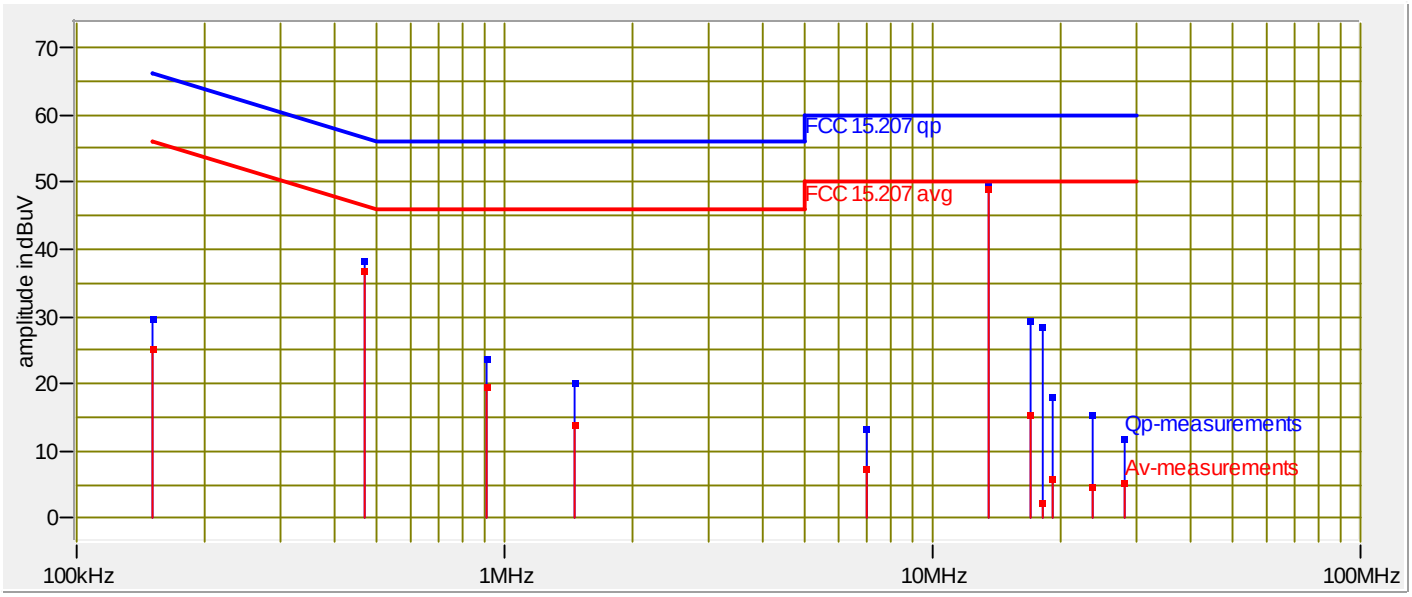
Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Joel T Schneider (Printed) — Joel T. Schneider (Signature)

CONDUCTED EMISSIONS

Test Report #:	NC1304943 Run 3	Test Area:	LTS		
EUT Model #:	506241-001	Date:	5/28/2013		
EUT Serial #:	E6215130219	EUT Power:	110V / 60Hz	Temperature:	23.0 °C
Test Method:	FCC 15.207			Air Pressure:	99.0 kPa
Customer:	Datacard			Rel. Humidity:	40.0 %
EUT Description:	Power supply for RFID Desktop Module (13.56 MHz)				
Notes:					
Data File Name:	4943.dat			Page:	4 of 4

Graph:



Tested by: Greg Jakubowski (Printed) — (Signature)

Reviewed by: Joel T Schneider (Printed) — (Signature)

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: 28 May 2013
Condition of EUT: Normal
Testing Start Date: 28 May 2013
Testing End Date: 21 June 2013

TÜV SÜD AMERICA INC

Tested by:
Greg Jakubowski
Senior EMC Technician

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 Rd W		
	Minnetonka, Mn		
	55343		
Contact:	Gary Gunderson	Position:	compliance engineer
Phone:	952-988-1230	Fax:	(952) 988-2658
E-mail Address:	gary_gunderson@datacard.com		

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

EUT Description	RFID wireless module		
EUT Name	RFID module		
Model No.:	506241	Serial No.:	E6215130219
Product Options:			
Configurations to be tested:			

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:
- ☐ Machinery Directive 89/392/EEC (EMC) Std:
- ☐ Medical Device Directive 93/42/EEC (EMC) Std:
- ☐ Vehicle Directive - 2004/104/EC (EMC)
  - ☐ Other Vehicle Std:
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☐ FCC: Class ☒ A ☐ B Part 15.2
- ☐ VCCI: Class ☐ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B (Separate Report)
- ☐ Canada: Class ☐ A ☐ B
- ☐ Australia: Class ☐ A ☐ B
- ☐ Other: R&TTE directive, FCC/IC radio,
- ☐ Ag Directive *2009/64/EC (EMC)

Third Party Certification (contact TÜV for quote), if applicable (*Signature on last page required).

☐ Attestation of Compliance (AoC)*	☐ EMC Certification (used with Octagon Mark)*
☐ Statement of Compliance (SoC, previously CoC)* - All aspects of the essential requirements were assessed	
Protection Class (Req'd for AoC, SoC, EMC Cert. 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	☐ Taiwan Certification
☐ Industry Canada / FCB Certification	☐ Korean Certification
☐ e-Mark 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 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: 3" Width: 1.6" Height: .06" Weight: 2 oz

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: 100-240 VAC (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: 1

Current (Amps/phase(max)): _____ Current (Amps/phase(nominal)): 2.5Amp

Other Power to the module is 5.0 vdc

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

Form

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*	☒	☐
	☐	☐	☐	☐	1	☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
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	☐	☐	☐	☐		☐	☐						☐	☐

Form

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level:

Description: System 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. RFID module

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 #
PWA, RFID DESKTOP MODULE	506241-001	E6215130219	GDI-506241001Control

Form

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 #*
I			
Control PWA	506429	E6215130055	
MEGA power supply	ATS090-P240	MDS090-P240-Dat	

Oscillator Frequencies

Manufacturer	*Frequency*	*Derived Frequency*	*Component # / Location*	*Description of Use*
	13.56MHz	Fund	Y1	RFID communication clock

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
			☐ 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***

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)

Gary M Gunderson	July 2, 2013
Customer authorization to perform tests according to this test plan.	Date
Gary Gunderson	July 2, 2013
Test Plan/CDF Prepared By (please print)	Date