



Electromagnetic Compatibility

EMC Report for


Product Description: Biometric Smart Card Reader

Model: DSVII SC

Applicant: Datastrip Products, Inc.

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Test Report Number: 30660147.001 Datastrip Prübericht Nr. DSVII			Test Report Summary	
Applicant: Datastrip Products, Inc. Auftraggeber 1 Waterview Drive Shelton, CT 06484		Tel: (203) 922-9222 Fax: (203) 922-9334 Email: Mdoyle@datastrip.net Martin Doyle		
Type of Equipment: Biometric Smart Card Reader Gegenstand der Prüfung				
Model Number: Bezeichnung: DSVII SC		Trademark: Ursprungszeichen 		
Standards: Prüfgrundlage See details below		Date of testing: November 11, 2005 – January 27 2006		
Standard Number	Description	Severity Level or Limit	Minimum Acceptable Performance Criteria	Summary Result
FCC Part 15	Radiated & Conducted Emissions	Subpart C	See Below	Complies
FCC Part 15.225	Operation within the band 13.110-14.010 MHz	See Below	See Below	Complies
FCC Part 15.225 a)	Field Strength Emissions within 13.553-13.567MHz	15,848 microvolts/meter at 30m	NA	Complies
FCC Part 15.225 b)	Field Strength Emission between 13.410 - 15.553MHz and 13.567 - 13.710 MHz	334 microvolts/meter at 30m	NA	Complies
FCC Part 15.225 c)	Field Strength Emissions between 13.110-13.410 MHz and 13.710 - 14.010 MHz	106 microvolts/meter at 30m	NA	Complies
FCC Part 15.225 d)	Field Strength Outside the 13.110-14.010MHz	Shall not exceed limits of FCC part 15.209	NA	Complies
FCC Part 15.225 e)	Frequency tolerance over -20 - +50 C at normal power supply and for 85% and 115% of rated supply voltage	0.01%	NA	Complies
FCC Part 15.225 f)	Frequency Powered tags	NA	NA	NA
FCC Part 15.207	Conducted Emissions	Below limit of section 15.207 a)	NA	Complies
FCC Part 15.209	Radiated Emissions	Below limit of section 15.209 a)	NA	Complies
Place of Test: TUV Rheinland of North America Prüfort 12 Commerce Road Newtown, CT 06470 USA E-mail: info-new@tuv.com Phone: (203) 426-0888 Web: http://www.tuv.com Fax: (203) 429-4009				
Test Result: Unit presented for testing complied with criteria shown above. Additional Information is contained in the following pages. Prüfergebnis				
Tested By: Der Sachverständige Dieter Baldamus		Checked By: geprüft Bruce Fagely		
May 22, 2006 Date, Signature Datum, Unterschrift		May 22, 2006 Date, Signature Datum, Unterschrift		

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2. Measuring Equipment Used

Manufacturer	Model	Serial Number	Calibrated	Calibration Period (Months)
Amplifier Research	DC2000	13559	11/29/05	12
Amplifier Research	FM2000 and FP2000 with probe stand	13390, 13447	03/30/05	12
California Instruments	5001iX-CTS-EOS-OMNI-411-413-160-5073	HK53766	08/12/05	12
California Instruments	1251RP	72186	07/08/05	12
Emco	3115	9402-4226	08/30/05	12
Emco	3146, 200 - 1000 MHz	9309-3689	03/30/05	12
Emco	3108	2234	08/03/05	12
Hewlett Packard	HP 8546A, 85460A	3330A00125, 3325A00134	03/13/05	12
Hewlett Packard	HP 8546A, 85460A	3520A00253, 3348A00304	08/25/05	12
IFI	SMCC100	0594-4451	NA	0
Keytek	CE Master	9904227	11/07/05	12
Marconi	2051	1196067073	08/18/05	12
Marconi	2030-502G	119809/039	12/21/05	12
MEB	KEMZ-801	12645	07/27/05	12
MEB	801-M3	12877	07/27/05	12
RF Power Labs	220-IKLD	90615004	NA	12
Schaffner	Modula 6000	34393	03/03/05	12
Schaffner	CBL6112B	2539	12/27/05	12
Schaffner	NSG 438	406	05/02/05	12
Schwarzbeck	NSLK 8126A (4 x 25A)	8126277	02/28/05	12
Schwarzbeck	VHA 9124 BBA 9106 elements and balun	9124-0206A/93	08/08/05	12
Schwarzbeck	FMZB 1516, Magnetic field loop antenna	151600/94	10/31/05	12

2.1 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.2 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

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2.3 Measurement Uncertainty

<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for ESD immunity measurements is $\pm 4.1\%$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for radiated immunity measurements is $\pm 2.7\text{dB}$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for EFT fast transient immunity measurements is $\pm 5.8\%$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for surge immunity measurements is $\pm 8.0\%$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for conducted immunity measurements is $\pm 1.5\text{dB}$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for power frequency magnetic field immunity measurements is $\pm 0.58\%$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for voltage variation and interruption measurements is $\pm 4.3\%$.
<input type="checkbox"/>	The estimated combined standard uncertainty for damped oscillatory wave immunity measurements is $\pm 8.7\%$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for radiated emissions measurements is $\pm 1.6\text{ dB}$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for conducted emissions measurements is $\pm 1.2\text{dB}$.
<input checked="" type="checkbox"/>	The estimated combined standard uncertainty for harmonic current and flicker measurements is $\pm 11.6\%$.

As described in QP090802

2.4 Location of original data

The original copies of all test data taken during actual testing were attached at Appendix B of this report and delivered to the applicant. A copy has been retained in the TUV Rheinland file for certification follow-up purposes.

2.5 Status of facility used for testing

The TUV Rheinland of North America EMC test facility located at 12 Commerce Road, Newtown, CT, USA is listed on the US Federal Communications Commission list of facilities approved to perform measurements and has been audited and found acceptable by TUV Rheinland GmbH, Cologne, Germany, a competent body in the European Union.

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2.6 Software and templates

✓	Description	Type *	Version	File Name	Date	Author
<input type="checkbox"/>	95/54/EC Broad Band measurement	ET	20050413	Car-Broad.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	95/54/EC Narrow Band measurement	ET	20050413	Car-Narr.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	FCC 15.109(b) Class A radiated emissions	ET	20050413	REFCC15A.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	FCC 15.109(a) Class B radiated emissions	ET	20050413	REFCC15B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	FCC 18.03 (a) Conducted Emissions on mains	ET	20050413	CEFC18.03a.xlt		
<input type="checkbox"/>	EN55103, Conducted emissions for Signal & Control Ports, DC Power Ports, Environment E4	ET	20050413	CE103IO.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55103, Conducted emissions, as above except for use with Current Clamp	ET	20050413	CE_Clamp103-I.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55013, Antenna Terminal Voltage	ET	20050413	ANT_TERM20.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55022 / FCC 15.107(b) Class A conducted emissions	ET	20050413	CE22_A.xlt	13-Apr-05	Baldamus
<input checked="" type="checkbox"/>	EN55022 / FCC 15.107(a) Class B conducted emissions	ET	20050413	CE22_B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55022A Conducted emissions for Telecom Class A	ET	20050413	CE22A_TELCO.xlt	13-Apr-05	Baldamus
<input checked="" type="checkbox"/>	EN55022B Conducted emissions for Telecom Class B	ET	20050413	CE22B_TELCO.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55022A Conducted emissions for Telecom Class A for Category 5 Lan	ET	20050413	CE22A_TELCO_CAT5.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55022B Conducted emissions for Telecom Class B for Category 5 Lan	ET	20050413	CE22B_TELCO_CAT5.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class A conducted emissions Group 1	ET	20050413	CE11_1A.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class A conducted emissions Group 2	ET	20050413	CE11_2A.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class B conducted emissions Group 1	ET	20050413	CE11_1B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class B conducted emissions Group 2	ET	20050413	CE11_2B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55014 Conducted emissions	ET	20050413	CE14-1.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55103-1 Magnetic Fields Emissions	ET	20050413	MagF55103.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55014 Disturbance Power Measurements for Household and Similar Equipments	ET	20050413	DP14-1.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	CISPR12 Radiated Emissions	ET	20050413	CISPR12.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55022 / FCC 15.109(g) Class A Radiated Emissions	ET	20050413	RE22_1A.xlt	13-Apr-05	Baldamus
<input checked="" type="checkbox"/>	EN55022 / FCC 15.109(g) Class B Radiated Emissions	ET	20050413	RE22_1B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class A Group 1 Radiated Emissions test	ET	20050413	RE11_1A.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class B Group 1 Radiated Emissions test	ET	20050413	RE11_1B.xlt	13-Apr-05	Baldamus
<input type="checkbox"/>	EN55011 Class A Group 2 Radiated Emissions test	ET	20050413	RE11_2A.xlt	13-Apr-05	Baldamus
<input checked="" type="checkbox"/>	EN55011 Class B Group 2 Radiated Emissions test	ET	20050413	RE11_2B.xlt	13-Apr-05	Baldamus
<input checked="" type="checkbox"/>	IEC 61000-4-3 Radiated immunity test	V	020322V/H3	RI_PLAY1.vee	22-Mar-02	Gaudette
<input type="checkbox"/>	IEC 61000-4-3 Radiated immunity field setup	V	19990906	RI_CAL1.vee	06-Aug-99	Dwyer
<input checked="" type="checkbox"/>	IEC 61000-4-4 Burst (Fast Transient) test	CE	Ver 3.0	CEWARE32	1998	Keytek
<input type="checkbox"/>	IEC 61000-4-4 Burst (Fast Transient) test	S	Ver 2.31 c	WinModula	2004	Schaffner
<input checked="" type="checkbox"/>	IEC 61000-4-5 Surge test	CE	Ver 3.0	CEWARE32	1998	Keytek
<input type="checkbox"/>	IEC 61000-4-5 Surge test	S	Ver 2.31 c	WinModula	2004	Schaffner
<input checked="" type="checkbox"/>	IEC 61000-4-6 Conducted immunity test	V	19990915	CI-PLAY1.vee	15-Sep-99	Dwyer
<input type="checkbox"/>	IEC 61000-4-6 Conducted immunity test field setup	V	19980220	CI_CAL.vee	20-Feb-98	Dwyer
<input checked="" type="checkbox"/>	IEC 61000-4-11 Voltage dip/short Interruptions	CE	Ver 3.0	CEWARE32	1998	Keytek
<input type="checkbox"/>	IEC 61000-4-11 Voltage dip/short Interruptions	S	Ver 2.31 c	WinModula	2004	Schaffner
<input checked="" type="checkbox"/>	IEC 61000-3-2 Harmonics	CI	CTS 3.0.19	lec1000-3-2	04-Apr-04	Cal. Inst.
<input checked="" type="checkbox"/>	IEC 61000-3-3 Flicker	CI	CTS 3.0.19	lec1000-3-3	04-Apr-04	Cal. Inst.

* ET = Excel Template, V = Agilent (HP) Vee Program, S= Schaffner Program, CI = California Instruments, H= Haefely Trench, CE= CE Master Program

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3. Test Plan

Refer to the test plan at appendix A.

4. Description of Equipment Tested

4.1 *General Description of Equipment*

See Description of the Unit in the test plan at appendix A.

5. Equipment Specifications

5.1 *Technical Data*

See Technical Data in the test plan at Appendix A.

5.2 *Physical Data*

See Technical Data in the test plan at Appendix A.

6. Reason for this Test

New Product

7. Configuration and Mode of Operation

7.1 *Configuration*

The equipment was configured as shown in the test plan at appendix A.

7.2 *Mode of Operation*

The EUT was operated as described in the test plan at appendix A.

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8. Performance Criteria

8.1 *Pass Criteria*

For emissions tests, the EUT is considered to pass a test or standard if the measured level is less than or equal to the applicable limit.

8.2 *Fail Criteria*

For emissions tests, the EUT is considered to fail a test or standard if the measured level is greater than the applicable limit.



9. Measurements

9.1 *Field Strength Emissions Section 15.225 a)*

9.1.1 Test Basis

FCC Subpart C

9.1.2 Test Specifications

a) The field strength of any emissions within the band 13.553- 13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

9.1.3 Test Procedure

Field Strength emissions testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies at which measurement was made in the OATS. The EUT was then taken to the outs and identified signals were maximized using a turntable and an antenna mast. Measurements were done at 3 meters in OATS. The measured levels were calculated for 30m distance.

The photographs at appendix C show the worst-case emissions configuration.

9.1.4 Deviations from Standard Test Procedures

None

9.1.5 Results

All final radiated emissions measurements were below (in compliance) the limits.

The result of the preliminary (semi-anechoic chamber), final (OATS) measurements and the maximum emissions measurements are shown in a tables.

Plots and the tabulated data are at Appendix B.



9.2 Field Strength Emissions Section 15.225 b)

9.2.1 Test Basis

FCC Subpart C

9.2.2 Test Specifications

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

9.2.3 Test Procedure

Field Strength emissions testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies at which measurement was made in the OATS. The EUT was then taken to the outs and identified signals were maximized using a turntable and an antenna mast. Measurements were done at 3 meters in OATS. The measured levels were calculated for 30m distance.

The photographs at appendix C show the worst-case emissions configuration.

9.2.4 Deviations from Standard Test Procedures

None

9.2.5 Results

All final radiated emissions measurements were below (in compliance) the limits.

The result of the preliminary (semi-anechoic chamber), final (OATS) measurements and the maximum emissions measurements are shown in a tables.

Plots and the tabulated data are at Appendix B.



9.3 Field Strength Emissions Section 15.225 c)

9.3.1 Test Basis

FCC Subpart C

9.3.2 Test Specifications

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

9.3.3 Test Procedure

Field Strength emissions testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies at which measurement was made in the OATS. The EUT was then taken to the outs and identified signals were maximized using a turntable and an antenna mast. Measurements were done at 3 meters in OATS. The measured levels were calculated for 30m distance.

The photographs at appendix C show the worst-case emissions configuration.

9.3.4 Deviations from Standard Test Procedures

None

9.3.5 Results

All final radiated emissions measurements were below (in compliance) the limits.

The result of the preliminary (semi-anechoic chamber), final (OATS) measurements and the maximum emissions measurements are shown in a tables.

Plots and the tabulated data are at Appendix B.



9.4 Field Strength Emissions Section 15.225 d)

9.4.1 Test Basis

FCC Subpart C

9.4.2 Test Specifications

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in Sec. 15.209.

9.4.3 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4 and 55022 including methods for signal maximizations and EUT configuration.

Photos will be included with the report show the EUT in its maximized configuration. It was confirmed that the EUT has a processors running between 108 and 500MHz so the frequency range from 150 kHz to 2,000 MHz was investigated for radiated emissions.

Radiated emissions testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies at which measurement should be made in the OATS. The EUT was then taken for measurements at 10 meters in OATS. The results of both tests can be found in appendix B.

The photographs at appendix C show the worst-case emissions configuration.

9.4.4 Deviations from Standard Test Procedures

None

9.4.5 Test Results

All final radiated emissions measurements were below (in compliance) the limits.

The result of the preliminary (semi-anechoic chamber), final (OATS) measurements and the maximum emissions measurements are shown in a tables.

Plots and the tabulated data are at Appendix B



9.5 Field Strength Emissions Section 15.225 e)

9.5.1 Test Basis

FCC Subpart C

9.5.2 Test Specifications

(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

9.5.3 Test Procedure

The EUT was placed into an oven. Initial frequency readings readings were performed at ambient temperature at nominal voltage using a spectrum analyzer. The oven was set to -20°C and left for 15 minutes. Frequency readings were performed again at 85%, 100% and 115% of nominal voltage. After that the oven was set to +50. Frequency readings were performed again at 85%, 100% and 115% of nominal voltage.

9.5.4 Deviations from Standard Test Procedures

None

9.5.5 Results

Environmental Phenomena	Input Voltage	Duration	Frequency	Frequency Variation of 13.56 MHz	Test Result C = Complies NC = Does not Comply
-20°C	102 ACV (85V)	15 minutes	13.56052	<0.01%	Complies
-20°C	120 ACV (100%)	15 minutes	13.56060	<0.01%	Complies
-20°C	138 ACV (115%)	15 minutes	13.56040	<0.01%	Complies
+50C	102 ACV (85%)	15 minutes	13.56140	<0.01%	Complies
+50C	120ACV (100%)	15 minutes	13.56060	<0.01%	Complies
+50C	138 ACV (115%)	15 minutes	13.56040	<0.01%	Complies

The frequency measurement was within the 0.01% of the operating frequency (13.56MHz)

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9.6 Field Strength Emissions Section 15.225 f)

9.6.1 Test Basis

FCC Subpart C

9.6.2 Test Specifications

(f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

9.6.3 Test Procedure

No Powered tags were used.

9.6.4 Deviations from Standard Test Procedures

None

9.6.5 Results

NA



9.7 Conducted Emissions

9.7.1 Test Basis Test

FCC Part 15

9.7.2 Test Specifications

FCC Part 15.207 a)

9.7.3 Test Procedure

Conducted emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration. The frequency range from 0.15 to 30 MHz was investigated for conducted emissions.

Conducted emissions were performed at AC120V/60Hz.

Conducted Emissions measurements were performed in the shielded room using procedures specified in the test plan and standard.

The photographs at appendix C show the worst-case emissions configuration.

9.7.4 Deviations from Standard

None

9.7.5 Test Results

All final conducted emissions measurements, were below (in compliance with) the specified limits. The results of the conducted emissions measurements and the maximum emissions are shown in a table.

Note:

The Conducted Emissions was tested with the Datastrip supplied external power supply (DS P/N 3090-01225-02) and External Power Supply AC Line Cord (DC P/N 3008-60163-01)



9.8 Radiated Emissions

9.8.1 Test Basis Test

FCC Part 15

9.8.2 Test Specifications

FCC Part 15.209 a)

9.8.3 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration.

Photos will be included with the report show the EUT in its maximized configuration. It was confirmed that the EUT has a processors running at 13.56 MHz so the frequency range from 150 kHz to 1,000 MHz was investigated for radiated emissions.

Radiated emissions testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies at which measurement should be made in the OATS. The photographs at appendix C show the worst-case emissions configuration. The EUT was then taken for measurements at 3 meters in OATS. The results of both tests can be found in appendix B.

9.8.4 Deviations from Standard

None

9.8.5 Test Results

All final conducted emissions measurements, were below (in compliance with) the specified limits. The results of the conducted emissions measurements and the maximum emissions are shown in a table.



APPENDIX A: TEST PLAN

Electro-Magnetic Compatibility (EMC)

Test Plan for

Product Description: Biometric Smart Card Reader

Model: DSVII SC

Applicant: Datastrip Products, Inc.

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TÜV Rheinland of North America, Inc., North American Headquarters, 12 Commerce Road, Newtown, CT 06470 - Tel (203)426-0888 - Fax (203)426-4009



10. TEST PLAN SUMMARY

Product Description: Biometric Smart Card Reader
Model: DSVII SC
Serial Number: DSViSCC0530K00731

Applicant: Datastrip Products, Inc.
1 Waterview Drive
Shelton, CT 06484

Contact: Martin Doyle
Telephone: (203) 922-9222
Fax: (203) 922-9334
e-mail: Mdoyle@datastrip.net

10.1 Test Plan Overview

Standard Number	Description	Severity Level or Limit	Minimum Acceptable Performance Criteria
FCC Part 15	Radiated & Conducted Emissions	Subpart C	See Below
FCC Part 15.225	Operation within the band 13.110-14.010 MHz	See Below	See Below
FCC Part 15.225 a)	Field Strength Emissions within 13.553-13.567MHz	15,848 microvolts/meter at 30m	NA
FCC Part 15.225 b)	Field Strength Emission between 13.410 - 15.553MHz and 13.567 -13.710 MHz	334 microvolts/meter at 30m	NA
FCC Part 15.225 c)	Field Strength Emissions between 13.110-13.410 MHz and 13.710 -14.010 MHz	106 microvolts/meter at 30m	NA
FCC Part 15.225 d)	Field Strength Outside the 13.110-14.010MHz	Shall not exceed limits of FCC part 15.209	NA
FCC Part 15.225 e)	Frequency tolerance over -20 - +50 C at normal power supply and for 85% and 115% of rated supply voltage	0.01%	NA
FCC Part 15.225 f)	Frequency Powered tags	NA	NA
FCC Part 15.207	Conducted Emissions	Below limit of section 15.207 a)	NA
FCC Part 15.209	Radiated Emissions	Below limit of section 15.209 a)	NA

10.2 Miscellaneous Information:

This test plan is intended to cover the EMC Directive requirements for the DSVII SC when used as an information technology equipment (ITE) in a residential and light industrial Environment. This test plan is intended for use by the manufacturer for making a Declaration of Conformity. It is not intended for use with a Technical Construction File. This test plan does not constitute authorization for the use of any TUV Rheinland test mark. A copy of this test plan is kept on file by TUV Rheinland, Newtown CT

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10.3 General Description of the EUT

The DSVII-SC® is a portable, handheld computer specifically designed for security, law enforcement, border control and positive I.D. verification applications. It features the ability to interface with both contact and Contactless Smart Cards. An integrated fingerprint sensor enables biometric verification of identity.

10.4 Equipment Specifications

10.4.1 Technical Data

Input Voltage Rating:	100-240 VAC
Input Current Rating:	2.5A Amps Max
Frequency Rating	50-60 Hz
Power Rating:	Power Rating Watts
<ul style="list-style-type: none">o 100-240 VAC, 50/60 Hz universal input.o 12 VDC @ 2.5 Amps maximum output.	

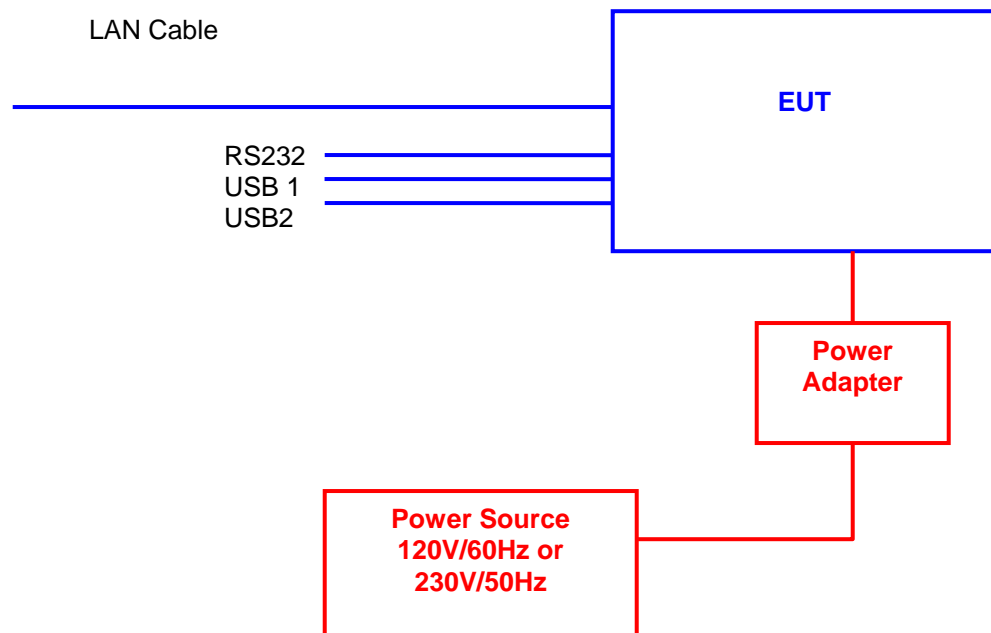
Voltage and frequency of supply during test:	230V, 50 Hz, 120V/60Hz (for FCC)
--	----------------------------------

10.4.2 Physical Data

EUT Dimensions:	11.5" x 5.5" x 2.1" (293.3mm x 139.4mm x 53.3mm)
EUT Weight:	Under 3 lbs. 5 oz. (1.375 Kg), including internal battery.

10.5 Configuration and Mode of Operation

10.5.1 Configuration



Cable	Description	Shielding	Length	Tested
1	AC Mains	No	1.5m	Yes
2	LAN	No	>3.0m	Yes
3	USB (2)	No	2.0m	No
4	RS-232	Yes	2.0m	No

10.5.2 Mode of operation

During the the test the an identification card was placed close to the EUT. The EUT was reading the card constantly verifying the information using a software.

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10.6 *Field Strength Emissions*

Standard(s) to be applied: ☒ FCC Subpart C

Section: ☒ FCC Part 15.225
☒ FCC Part 15.225 a)
☒ FCC Part 15.225 b)
☒ FCC Part 15.225 c)
☒ FCC Part 15.225 d)
☒ FCC Part 15.225 e)
☐ FCC Part 15.225 f)

Operation frequency: 13.56MHz

Additional Information: No power tags present, therefore section f is not applicable.

10.7 *Conducted Emissions Test Plan*

Standard(s) to be applied: ☒ FCC part 15.207a)

Test Ports: ☒ Mains

Additional Information: Test to be performed at 115V/60Hz for FCC compliance

10.8 *Radiated Emissions Test Plan*

Standard(s) to be applied ☒ FCC Part 15.209 a)

Antenna Distance: Testing for radiated emissions shall be done at 10 meters in the Open Area Test Site (OATS).

Frequency range: Shall be tested up to 1 GHz.

Additional Information: A preliminary scan of the emissions will be performed in the 3m semi-anechoic chamber. Antenna Distance: Testing for radiated emissions shall be done at 3 meters in the Open Area Test Site (OATS).



APPENDIX B: TEST DATA

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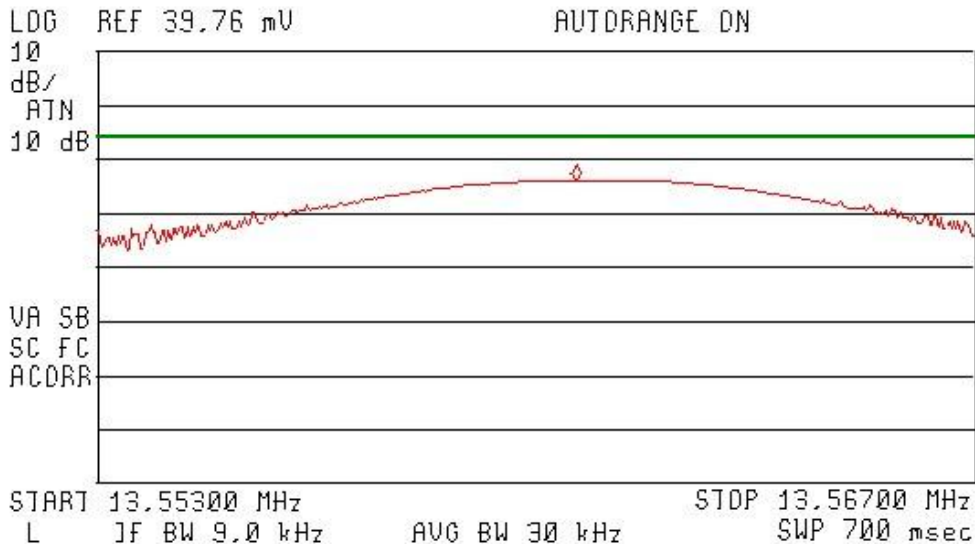
TUV Rheinland of North America, Inc., North American Headquarters, 12 Commerce Road, Newtown, CT 06470 - Tel (203)426-0888 - Fax (203)426-4009



NOTES:

Field Strength Emissions
FCC Part 15.225 a)

14:09:42 NOV 22, 2005 FCC PART 15.225a) (3m)
MFR: DATASSTRIP MODEL: DSV11-SC
MARKER 13.56060 MHz 2.5644 mV
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.56060 MHz 2.5644 mV



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|---|---|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input type="checkbox"/> NSLK 8126 LISN | <input checked="" type="checkbox"/> Other FMZB1516 Loop Antenna |

MEAS TYPE:

- ☒ Radiated Prescan
☐ Radiated Final
☐ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☒ Vertical
☒ Horizontal
☐ Line
☐ Neutral
☐ NA

DISTANCE:

- ☒ 3 Meter
☐ 10 Meter
☐ _____ Meter
☐ NA

LOCATION:

- ☐ OATS
☒ Semi-Anechoic
☐ Shielded Room
☐ Factory Floor
☐ Other _____

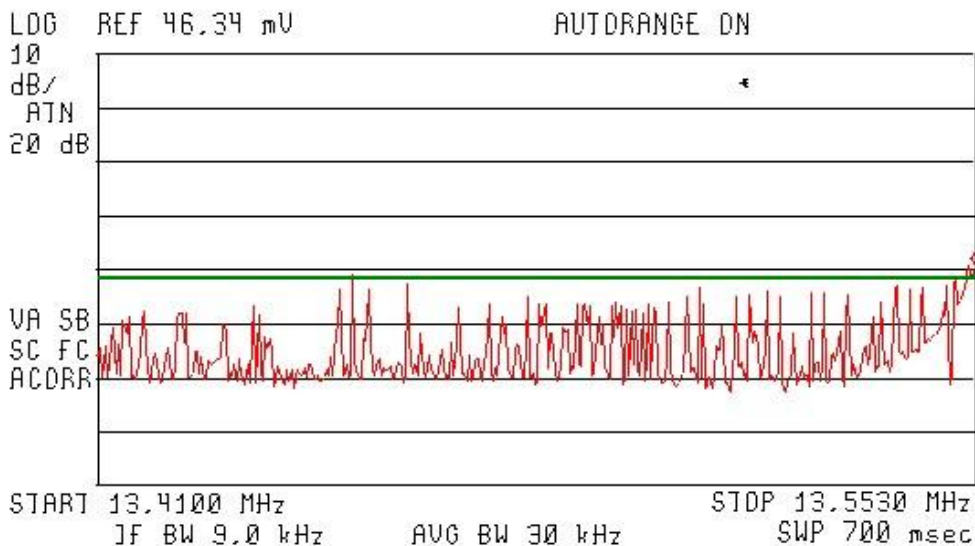
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NOTES:

Field Strength Emissions
FCC Part 15.225 b)
13.410MHz – 13.553MHz

14:20:09 NOV 22, 2005 FCC PART 15.225b) (3m)
MFR: DATASSTRIP MODEL: DSV11-SC
MARKER 13.5530 MHz 495.43 μ V
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.5530 MHz
495.43 μ V



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|---|---|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input type="checkbox"/> NSLK 8126 LISN | <input checked="" type="checkbox"/> Other FMZB1516 Loop Antenna |

MEAS TYPE:

- ☒ Radiated Prescan
☐ Radiated Final
☐ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☒ Vertical
☒ Horizontal
☐ Line
☐ Neutral
☐ NA

DISTANCE:

- ☒ 3 Meter
☐ 10 Meter
☐ _____ Meter
☐ NA

LOCATION:

- ☐ OATS
☒ Semi-Anechoic
☐ Shielded Room
☐ Factory Floor
☐ Other _____

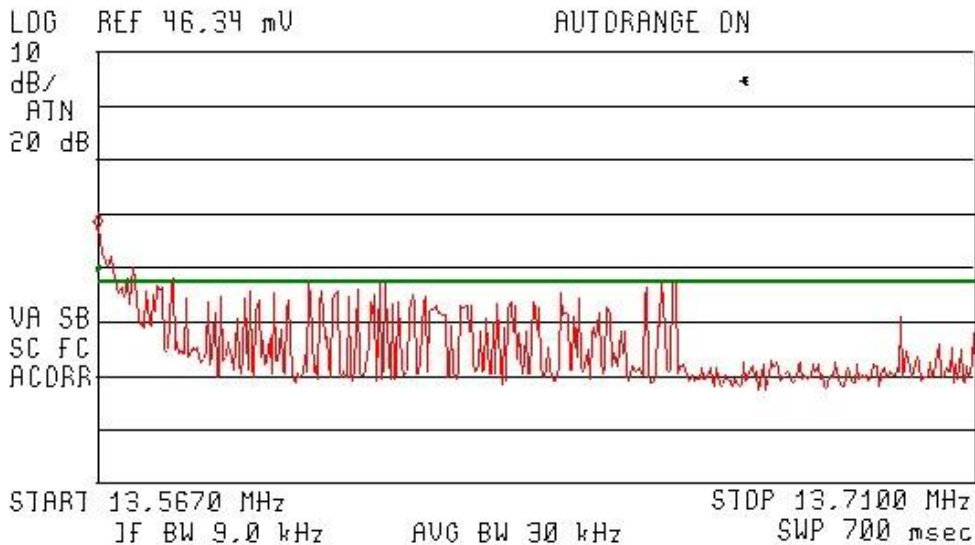
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NOTES:

Field Strength Emissions
FCC Part 15.225 b)
13.567MHz – 13.710MHz

14:21:07 NOV 22, 2005 FCC PART 15.225b) (3m)
MFR: DATASSTRIP MODEL: DSVII-SC
MARKER 13.5670 MHz 1.0463 mV
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.5670 MHz
1.0463 mV



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|---|---|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input type="checkbox"/> NSLK 8126 LISN | <input checked="" type="checkbox"/> Other FMZB1516 Loop Antenna |

MEAS TYPE:

- ☒ Radiated Prescan
☐ Radiated Final
☐ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☒ Vertical
☒ Horizontal
☐ Line
☐ Neutral
☐ NA

DISTANCE:

- ☒ 3 Meter
☐ 10 Meter
☐ _____ Meter
☐ NA

LOCATION:

- ☐ OATS
☒ Semi-Anechoic
☐ Shielded Room
☐ Factory Floor
☐ Other _____

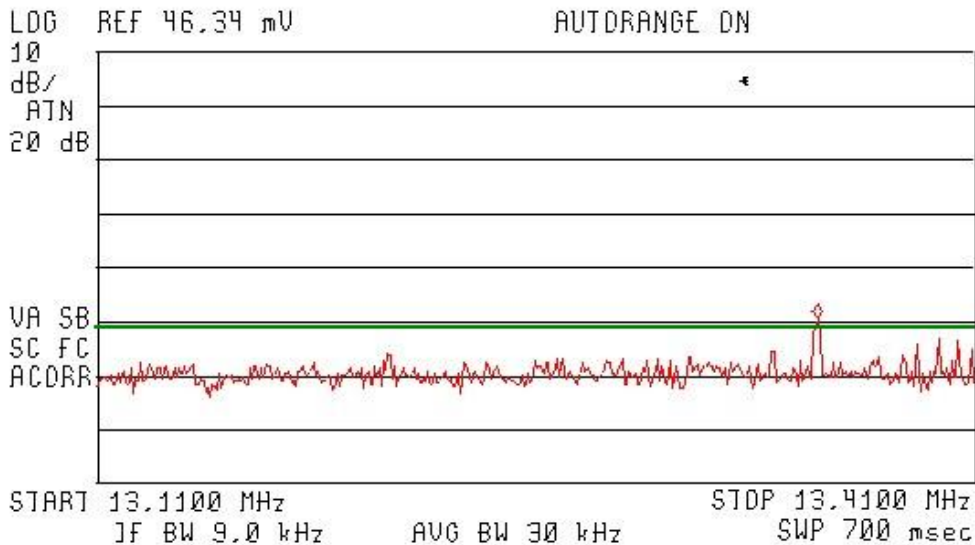
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NOTES:

Field Strength Emssions
FCC Part 15.225 c)
13.110MHz – 13.410MHz

14:22:20 NOV 22, 2005 FCC PART 15.225c) (3m)
MFR: DATASSTRIP MODEL: DSV11-SC
MARKER 13.3555 MHz 151.18 μ V
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.3555 MHz
151.18 μ V



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|---|---|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input type="checkbox"/> NSLK 8126 LISN | <input checked="" type="checkbox"/> Other FMZB1516 Loop Antenna |

MEAS TYPE:

- ☒ Radiated Prescan
☐ Radiated Final
☐ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☒ Vertical
☒ Horizontal
☐ Line
☐ Neutral
☐ NA

DISTANCE:

- ☒ 3 Meter
☐ 10 Meter
☐ _____ Meter
☐ NA

LOCATION:

- ☐ OATS
☒ Semi-Anechoic
☐ Shielded Room
☐ Factory Floor
☐ Other _____

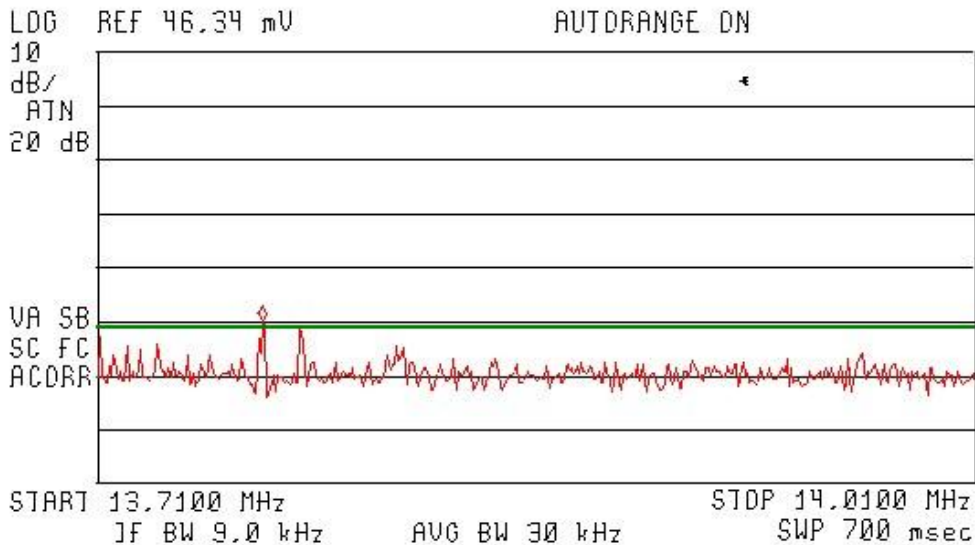
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NOTES:

Field Strength Emssions
FCC Part 15.225 c)
13.710MHz – 14.010MHz

14:23:01 NOV 22, 2005 FCC PART 15.225c) (3m)
MFR: DATASSTRIP MODEL: DSV11-SC
MARKER 13.7661 MHz 143.38 μ V
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 13.7661 MHz
143.38 μ V



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|---|---|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input type="checkbox"/> NSLK 8126 LISN | <input checked="" type="checkbox"/> Other FMZB1516 Loop Antenna |

MEAS TYPE:

- ☒ Radiated Prescan
☐ Radiated Final
☐ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☒ Vertical
☒ Horizontal
☐ Line
☐ Neutral
☐ NA

DISTANCE:

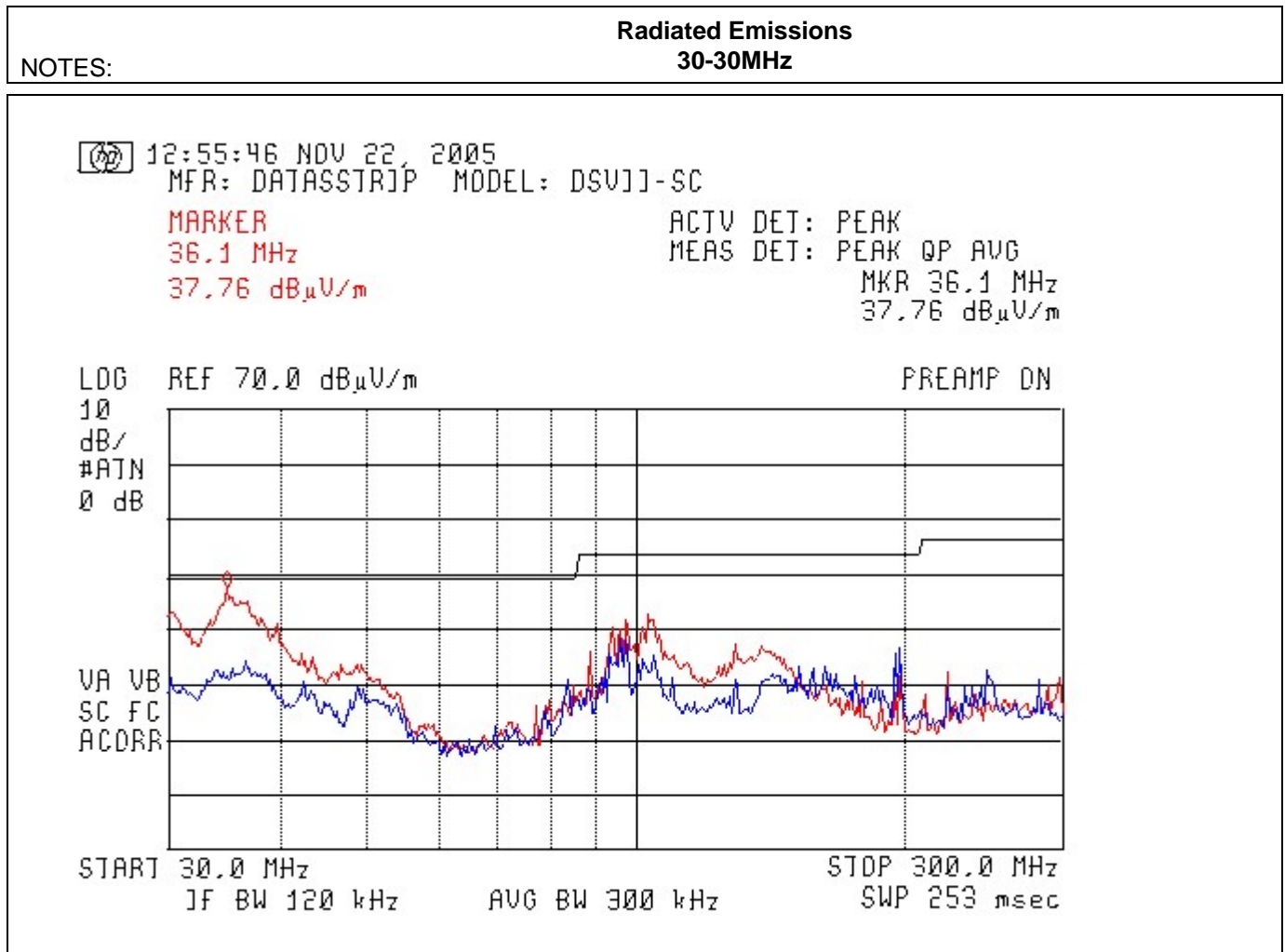
- ☒ 3 Meter
☐ 10 Meter
☐ _____ Meter
☐ NA

LOCATION:

- ☐ OATS
☒ Semi-Anechoic
☐ Shielded Room
☐ Factory Floor
☐ Other _____

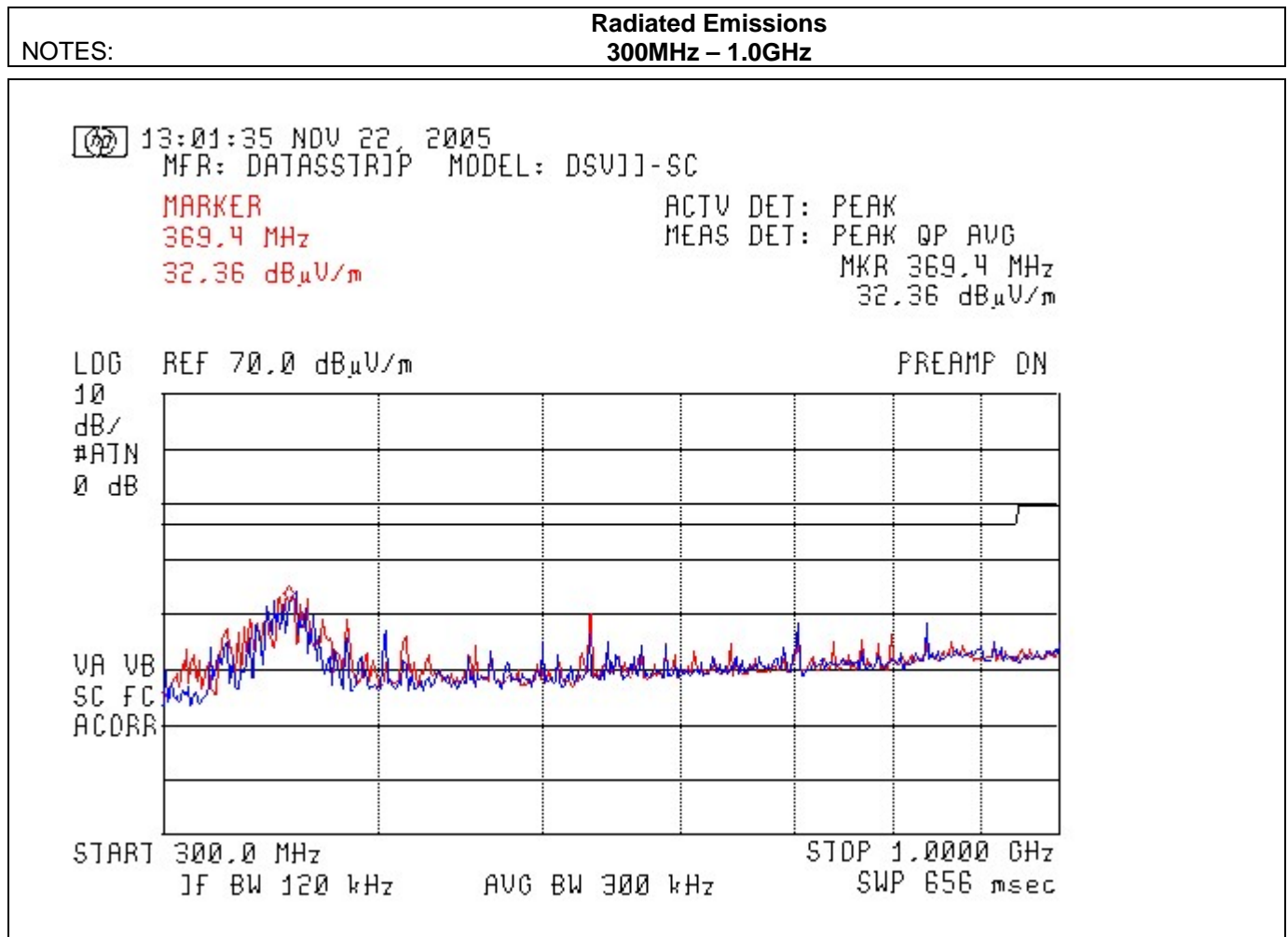
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Radiated Emissions Measurements									
Standard:	47 CFR 15.225								
Device Tested:	Datastrip - DSVII-SC							PRESCAN or FINAL:	Final
								Distance:	10m
		Measured Level							
Meas #	Frequency Range	Freq (MHz)	Measured Quasi-Peak @ 3m dBµV/m	Antenna + Cable Correction Factor (included in measured levels)	Adjusted Quasi-Peak Level for 30m dBµV/m	Quasi-Peak Limit dB	Quasi-Peak Δ	Result	Comment
15.225 a)									
1	13.5530-13.5670	13.56	68.18	18.70	28.18	84.00	-55.82	Complied	
15.225 b)									
2	13.410-13.553	13.55	53.88	18.70	13.88	50.47	-36.59	Complied	
3	13.567-13.710	13.57	60.39	18.70	20.39	50.47	-30.08	Complied	
15.225 c)									
4	13.110-13.410	13.36	43.59	18.70	3.59	40.51	-36.92	Complied	
5	13.710-14.010	13.77	43.13	18.70	3.13	40.51	-37.38	Complied	
Tested by:	Dieter Baldamus								
TUV Rheinland of North America, Inc.		12 Commerce Road	Newtown, CT 06470		Tel: (203) 426-0888	Fax: (203) 426-4009			
REFCCEB.jlt Revised 10MAR03									
Measured Quasi Peak = Measured Level + Antenna Factor + Cable Factor (Included in the measurement)									
Adjusted Quasi-Peak Level for 30m = Measured Quasi-Peak Level - 40*Log (30/3) According to 15.31 (f)(2)									



ANTENNA/COUPLER:			
<input type="checkbox"/> 9124 Bicon	<input checked="" type="checkbox"/> 3109 Bicon	<input type="checkbox"/> CBL6140 X-Wing	<input type="checkbox"/> NNB-4/63TL LISN
<input type="checkbox"/> 3146 Log Per	<input type="checkbox"/> 3115 Horn	<input type="checkbox"/> MDS-21 Clamp	<input type="checkbox"/> NNB-4/200X LISN
<input type="checkbox"/> 3106 Horn	<input type="checkbox"/> CBL6112B Bilog	<input type="checkbox"/> NSLK 8126 LISN	<input type="checkbox"/> Other _____
MEAS TYPE:	POLARIZATION:	DISTANCE:	LOCATION:
<input checked="" type="checkbox"/> Radiated Prescan	<input checked="" type="checkbox"/> Vertical	<input checked="" type="checkbox"/> 3 Meter	<input type="checkbox"/> OATS
<input type="checkbox"/> Radiated Final	<input checked="" type="checkbox"/> Horizontal	<input type="checkbox"/> 10 Meter	<input checked="" type="checkbox"/> Semi-Anechoic
<input type="checkbox"/> Conducted	<input type="checkbox"/> Line 1	<input type="checkbox"/> _____ Meter	<input type="checkbox"/> Shielded Room
<input type="checkbox"/> Disturbance Power	<input type="checkbox"/> Line 2	<input type="checkbox"/> NA	<input type="checkbox"/> Factory Floor
<input type="checkbox"/> Other _____	<input type="checkbox"/> Line 3		<input type="checkbox"/> Other _____

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<u>ANTENNA/COUPLER:</u>			
<input type="checkbox"/> 9124 Bicon <input checked="" type="checkbox"/> 3146 Log Per <input type="checkbox"/> 3106 Horn	<input type="checkbox"/> 3109 Bicon <input type="checkbox"/> 3115 Horn <input type="checkbox"/> CBL6112B Bilog	<input type="checkbox"/> CBL6140 X-Wing <input type="checkbox"/> MDS-21 Clamp <input type="checkbox"/> NSLK 8126 LISN	<input type="checkbox"/> NNB-4/63TL LISN <input type="checkbox"/> NNB-4/200X LISN <input type="checkbox"/> Other _____
<u>MEAS TYPE:</u> <input checked="" type="checkbox"/> Radiated Prescan <input type="checkbox"/> Radiated Final <input type="checkbox"/> Conducted <input type="checkbox"/> Disturbance Power <input type="checkbox"/> Other _____	<u>POLARIZATION:</u> <input checked="" type="checkbox"/> Vertical <input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Line 1 <input type="checkbox"/> Line 2 <input type="checkbox"/> Line 3	<u>DISTANCE:</u> <input checked="" type="checkbox"/> 3 Meter <input type="checkbox"/> 10 Meter <input type="checkbox"/> _____ Meter <input type="checkbox"/> NA	<u>LOCATION:</u> <input type="checkbox"/> OATS <input checked="" type="checkbox"/> Semi-Anechoic <input type="checkbox"/> Shielded Room <input type="checkbox"/> Factory Floor <input type="checkbox"/> Other _____

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[illegible]

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Radiated Emissions Measurements													
Standard:	47 CFR 15.209				PRESCAN or FINAL:		Final			Date:	11/22/2015		
Device Tested:	Datastrip - DSCI-SC				Distance:		3.0m			File:	05112202.xls		
			Measured Level										
							Antenna + Cable Correction Factor (included in measured levels)						
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Δ		Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment	
1	27.1200	27.45	21.54	18.56	40.00	-18.46	18.50	Complied	Vertical	268	1.00	(2nd Harmonic)	
2	36.6033	28.33	20.90	34.06	40.00	-19.10	15.37	Complied	Vertical	268	1.00		
3	101.6437	31.20	27.28	17.79	43.50	-16.22	10.65	Complied	Vertical	171	1.00		
4	105.0203	24.34	17.91	11.80	43.50	-25.59	10.95	Complied	Vertical	2	1.00		
5	133.3105	29.77	25.98	21.45	43.50	-17.52	11.65	Complied	Vertical	164	1.00		
6	200.0000	40.62	39.19	36.38	43.50	-4.31	9.29	Complied	Horizontal	151	2.33	Maximum Emissions	
7	203.4221	37.80	35.49	34.06	43.50	-8.01	9.26	Complied	Horizontal	178	1.76		
8	359.9884	48.36	40.22	30.17	46.00	-5.78	14.64	Complied	Horizontal	316	1.00		
Tested by:	Dieter Baldamus												
TUV Rheinland of North America, Inc.				12 Commerce Road		Newtown, CT 06470		Tel: (203) 426-0688 Fax: (203) 426-4009					REFC015B.xlt Revised 10/04/03
Measured Qusi Peak = Measured Level + Antenna Factor + Cable Factor (Included in the measurement)													

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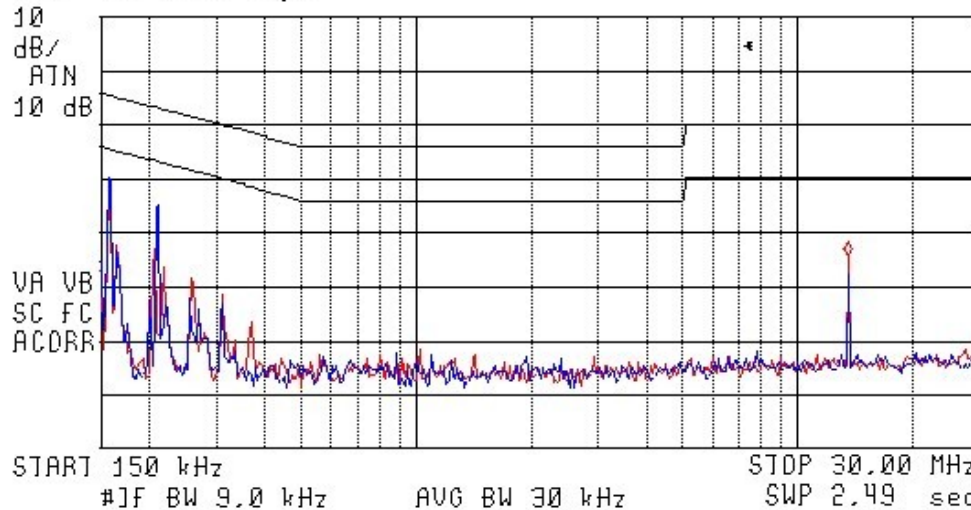


NOTES:

Conducted Emissions
Conducted Emissions at:120/60Hz

14:29:35 JAN 06, 2006
MFR: DATASTRIP MODEL DSU11 - BLUE CORD 120V/60Hz
MARKER
13.53 MHz
35.66 dB μ V

LOG REF 60.0 dB μ V



ANTENNA/COUPLER:

- | | | | |
|---------------------------------------|---|--|--|
| <input type="checkbox"/> 9124 Bicon | <input type="checkbox"/> 3109 Bicon | <input type="checkbox"/> CBL6140 X-Wing | <input type="checkbox"/> NNB-4/63TL LISN |
| <input type="checkbox"/> 3146 Log Per | <input type="checkbox"/> 3115 Horn | <input type="checkbox"/> MDS-21 Clamp | <input type="checkbox"/> NNB-4/200X LISN |
| <input type="checkbox"/> 3106 Horn | <input type="checkbox"/> CBL6112B Bilog | <input checked="" type="checkbox"/> NSLK 8126 LISN | <input type="checkbox"/> Other _____ |

MEAS TYPE:

- ☐ Radiated Prescan
☐ Radiated Final
☒ Conducted
☐ Disturbance Power
☐ Other _____

POLARIZATION:

- ☐ Vertical
☐ Horizontal
☒ Line
☒ Neutral
☐ NA

DISTANCE:

- ☐ 3 Meter
☐ 10 Meter
☐ _____ Meter
☒ NA

LOCATION:

- ☐ OATS
☐ Semi-Anechoic
☒ Shielded Room
☐ Factory Floor
☐ Other _____

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Conducted Emissions Measurements							
Standard:	EN5022:1998, Class B/FCC Part 15.107 (a)						
	Device Tested: Datastrip - DSV-II (120V/60Hz)						
Signal Num	Freq MHz	Peak Amp dBuV	QP Amp dBuV	Avg Amp dBuV	QP Limit dBuV	Avg Limit dBuV	Conductor
1	0.1640	46.39	45.55	31.47	65.26	55.26	Line
2	0.2183	42.26	40.96	27.28	62.88	52.88	Line
3	0.2736	37.58	36.41	25.29	61.01	51.01	Line
4	0.3299	27.40	25.20	20.89	59.45	49.45	Line
5	13.5603	36.85	36.28	35.14	60.00	50.00	Line
6	0.1648	46.21	45.37	32.22	65.22	55.22	Neutral
7	0.2190	41.96	41.26	27.95	62.85	52.85	Neutral
8	0.2738	36.86	34.68	23.13	61.00	51.00	Neutral
9	6.8574	21.98	20.12	18.69	60.00	50.00	Neutral
10	13.5607	31.57	30.81	29.67	60.00	50.00	Neutral
Tested by:	Dieter Baldamus						
TUV Rheinland of North America, Inc.	12 Commerce Road	Newtown, CT 06470	Tel:(203) 426-0868		Fax: (203) 426-4009		
CE22_B.M.Revised 21OCT2005							
QP Amp = QP Measurement + LISN Factor + Cable Factor (Included in Measurement)							
Avg Amp = Average Measurement + LISN Factor + Cable Factor (Included in Measurement)							

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APPENDIX C: PHOTOGRAPHS

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Set up for Conducted
Emissions Test



Setup for Radiated
emissions Prescan in
Anechoic Chamber



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Setup for Radiated
emissions and Field
Strength emissions on 10
meter OATS – Final test



Internal view
Frequency Measurement
at -20°C and +50°C



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Internal view
Frequency Measurement
at -20°C and +50°C



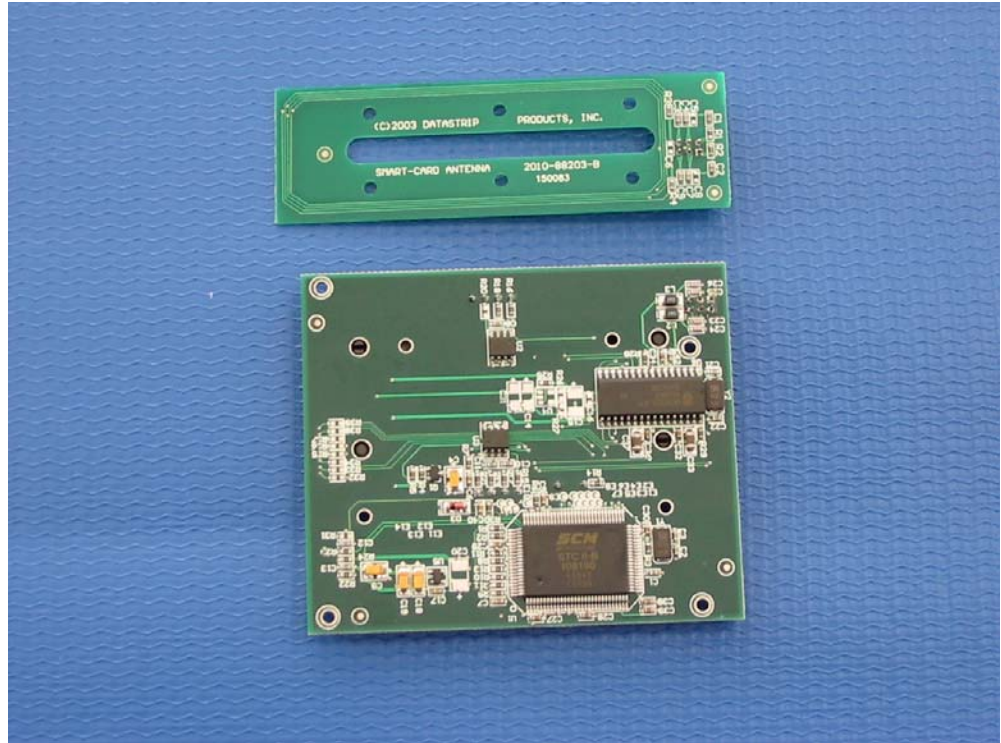
Internal view



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Internal View



Internal View



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Internal View



Internal view
Power Supply



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APPENDIX D: CONSTRUCTIONAL DATA FORM

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TÜV Rheinland D-51101 Köln 91 Am Grauen Stein/ Konstantin-Wille-Str. 1		Please submit in duplicate		
		Gen-Ausw-Nr.	Aktenzeichen: 30660147.002 Datastrip DSVII.doc	Anlage-Nr. 1 of 2
EMC/EMV Constructional Data Form				
	Applicant	Factory	Representative in the EU	
Name:	Martin Doyle	Same as applicant		
Company:	Datastrip Products, Inc.			
Address:	1 Waterview Drive Shelton, CT 06484			
Phone/Fax	(203) 922-9222 / (203) 922-9334			
Product Description/Application: Biometric Smart Card Reader				
DSVII SC and No.: DSVII SC				
Serial No.: DSViISCC0530K00731				
Operating Modes: EUT will be operated at 230V, 50 Hz, 120V/60Hz (for FCC)				
Type of EMI (i.e., wide band, narrow band, clicks): Narrow Band, Wide Band		Rated Voltage, Current, and Frequency: 12VDC (From Adapter 100-240VAC or Battery), 50-60 Hz, 2.5A Amps		
Protection Class: I		Repetition Frequency (<10kHz, >10kHz): >10kHz		
TÜV Rheinland Prüfstelle für Gerätesicherheit		Applicant		
Köln, den	(Ort/place)	(Datum/date)		
(Report Copy Not Signed)		(Report Copy Not Signed)		
TÜV Rheinland Prüfstelle für Gerätesicherheit		(Stempel und Unterschrift des Antragstellers/ stamp and signature of applicant)		

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[illegible]

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