

Electromagnetic Compatibility Test Report

Prepared in accordance with

FCC Part 15 , RSS-210

On

Biometric Smart Card Reader

DSVII+ Turbo/Model#: 2011-00001

Prepared for:

Datastrip Products, Inc.

1 Waterview Drive

Shelton, CT 06484

Prepared by:

TUV Rheinland of North America, Inc.

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Auftraggeber: <i>Client:</i>	Datastrip Products, Inc. 1 Waterview Drive Shelton, CT 06484	Martin Doyle (203)922-9222 / (203) 922-9334 mdoyle@datastrip.net
Bezeichnung: <i>Identification:</i>	Biometric Smart Card Reader	Serien-Nr.: <i>Serial No.</i>
Gegenstand der Prüfung: <i>Test item:</i>	DSVII+ Turbo/Model#: 2011-00001	Prüfdatum: <i>Date tested:</i>
Prüfort: <i>Testing location:</i>	TUV Rheinland of North America 12 Commerce Road Newtown, CT 06470-1607 U.S.A.	
Prüfgrundlage: <i>Test specification:</i>	Emissions: FCC Part 15.225 FCC Part 15.207, FCC Part 15.205, Part 15.209 and Part 15.215 b), FCC part 15.215 c), RSS-210	
Prüfergebnis: <i>Test Result</i>	Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The above product was found to be Compliant to the above test standard(s)	
geprüft / tested by: Dieter Baldamus	kontrolliert / reviewed by: Bruce Fagley	
10 July 2008		
Datum <i>Date</i>	Name <i>Name</i>	Unterschrift <i>Signature</i>
Sonstiges : <i>Other Aspects:</i>	None	
Abkürzungen: OK, Pass, Compliant, Complies = entspricht Prüfgrundlage Fail, Not Compliant, Does not Comply = entspricht nicht Prüfgrundlage N/A = nicht anwendbar	Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable	
		Industry Canada
US5112	200111-0	3466D-1

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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15 , RSS-210 based on the results of testing performed on June 5th -12th 2008 on the Biometric Smart Card Reader, Model No. DSVII+ Turbo/Model#: 2011-00001, manufactured by Datastrip Products, Inc.. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary of Test Results

Applicant	Datastrip Products, Inc. 1 Waterview Drive Shelton, CT 06484	Tel	(203)922-9222	Contact	Martin Doyle
		Fax	(203) 922-9334	e-mail	mdoyle@datastrip.net
Description	Biometric Smart Card Reader	Model Number	DSVII+ Turbo/Model#: 2011-00001		
Serial Number	DSVIISCBK073600583	Test Voltage/Freq.	120V/60Hz		
Test Date Completed:	June 5th -12th 2008	Test Engineer	Dieter Baldamus		
Standards	Description	Severity Level or Limit		Criteria	Test Result
FCC Part 15 Subpart C Standard	Radio Frequency Devices – Subpart C: Intentional radiators	See called out basic standards below		See Below	Complies
RSS-210 Standard	Low-power Licence-exempt Radiocommunication Devices Category I Equipment	See called out basic standards below		See Below	Complies
FCC Part 15.225	Operation within the band 13.110-14.010 MHz.	See called out basic standards below		See Below	Complies
FCC Part 15.225 a)	Field Strength Emissions within 13.553-13.567MHz	15,848 microvolts/meter at 30m		Below Limit	Complies
FCC Part 15.225 b)	Field Strength Emissions between 13.410 - 15.553MHz and 13.567 - 13.710 MHz	334 microvolts/meter at 30m		Below Limit	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		Below Limit	Complies
FCC Part 15.225 d)	Field Strength Outside the 13.110-14.010MHz	Shall not exceed limits of FCC Part 15.209		Below Limit	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% of operating frequency		Within Limit	Complies
FCC Part 15.225 f)	Frequency Powered tags	NA. Tags are not powered		NA	Complies
FCC Part 15.207	Conducted Emissions	Below limit of section 15.207 a)		Below Limit	Complies
FCC Part 15.205, Part 15.209 and Part 15.215 b)	Radiated Emissions	Below limit of section 15.205, 15.209 a), 15.215b)		Below Limit	Complies
FCC part 15.215 c), RSS-210	20dB Bandwith	20dB Contained within the Frequency Band		Within Limit	Complies

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2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 12 Commerce Road, Newtown CT is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No US5112). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

2.1.2 NIST / NVLAP

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200111-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Industry Canada

Registration No.: 3466D-1. The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2003.

2.2 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions measurements is ± 1.6 dB.

The estimated combined standard uncertainty for conducted emissions measurements is ± 1.2 dB.

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

2.4 Measurement Equipment Used

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
Power Supply	California Instruments	5001iX	HK53766	08/04/07	08/04/08	All
Antenna Horn	Emco	3115	9402-4227	03/17/08	03/17/10	RE, RI
Antenna, Log. Periodic	Emco	3146	9309-3691	06/26/06	06/26/08	RE, RI
Antenna, Bicon	Emco	3108	2234	06/26/06	06/26/08	RE, RI
Receiver	Hewlett Packard	HP 8546A, 85460A	3330A00125, 3325A00134	03/14/08	03/14/09	CE, DP, CE
Antenna, Bilog	Schaffner	CBL6112D	22238	04/04/06	04/04/08	RE
LISN	Schwarzbeck	NSLK 8126A (4 x 25A)	8126277	03/13/06	03/13/08	CE
LISN	Schwarzbeck	NSLK 8126A (4 x 25A)	8126278	08/26/06	08/26/08	CE
Spectrum Analyzer	Hewlett Packard	HP 8593E	3649A00194	06/26/07	06/26/08	RE,
Antenna	Sunol Sciences	JB3	A022707	03/08/07	03/08/09	RE, RI

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

3 Product Information

3.1 Product Description

See Section 6.4.

3.2 Equipment Modifications

No modifications were needed to bring product into compliance.

3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in appendix A of this report

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Turbo

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Figure 1 – External Photo of EUT

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Figure 2 – Photo of EUT Power Supply

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4 Measurements

4.1 Radiated Field Strength Emissions Section 15.225 a) b) c)

- (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.
- (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.
- (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.

4.1.1 Over View of Test

Results	Complies (as tested per this report)						Date	05/13/2008
Standard	FCC Part 15.225 a) b) c)							
Product Model	DSVII+ Turbo/Model#: 2011-00001				Serial#	DSVIIISCBK073600583		
Configuration	See test plan for details							
Test Set-up	Tested on 10m O.A.T.S. placed on turn-table, see test plans for details							
EUT Powered By	120V/60Hz	Temp	22°C	Humidity	45%	Pressure	1001mbar	
Frequency Range	13.110-14.010MHz							
Perf. Criteria	Below Limit		Perf. Verification	Readings Under Limit				
Mod. to EUT	None		Test Performed By	Dieter Baldamus				

4.1.2 Test Procedure

Radiated field strength 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. Testing was performed at a distance of 10 meters on the OATS and the reading levels were adjusted to 30m. The frequency range from 13.110 to 14.010MHz was investigated for radiated field strength emissions.

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the radiated field strength emission test.

4.1.4 Final Test

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

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4.1.5 Final Tabulated Data

Radiated Emissions Measurements			PRESCAN or FINAL			Date: 5/13/2008			
Standard:	47 CFR FCC Part 15.225	Device Tested:	Datastrip - DSVII+ Turbo	Mode:	Normal Operation	Distance:	10m	File Name:	08040501 Fundamental
Mount:	Table Top	Modifications:	NA	Measured Level					
Meas #	Frequency Range (MHz)	Measured Freq (MHz)	Measured Peak (dB μ V/m)	Measured QuasiPeak (dB μ V/m)	Antenna + Cable Correction Factor (dB) (Included in measured QP)	30m Adjusted Measured QuasiPeak (dB μ V/m)	QuasiPeak Limit (dB μ V/m)	QuasiPeak (dB μ V/m)	Result
RBW = 9kHz VBW=30kHz									
FCC Part 15.255 (a)									
1	13.553-13.567	13.5608	48.31	46.80	18.70	27.72	84.00	-56.28	Complied X Orientation
2	13.553-13.567	13.5618	52.20	51.84	18.70	32.76	84.00	-51.24	Complied Y Orientaiton Maximum Emissions
3	13.553-13.567	13.5608	49.06	48.54	18.70	29.46	84.00	-54.54	Complied Z Orientation
FCC Part 15.255 (b)									
	13.410-13.553	13.5530	35.32	33.06	18.70	13.98	50.47	-36.50	Complied X Orientation
	13.567-13.710	13.5670	35.02	33.04	18.70	13.96	50.47	-36.52	Complied X Orientation
	13.410-13.553	13.5530	46.17	45.49	18.70	26.41	50.47	-24.07	Complied Y Orientaiton Maximum Emissions
	13.567-13.710	13.5670	43.23	42.32	18.70	23.24	50.47	-27.24	Complied Y Orientaiton Maximum Emissions
	13.410-13.553	13.5530	40.50	39.05	18.70	19.97	50.47	-30.51	Complied Z Orientation
	13.567-13.710	13.5670	40.38	39.05	18.70	19.97	50.47	-30.51	Complied Z Orientation
FCC Part 15.255 (c)									
	13.110-13.410	13.4100	26.54	25.45	18.70	6.37	40.51	-34.14	Complied X Orientation
	13.710-14.010	13.7100	26.44	25.44	18.70	6.36	40.51	-34.15	Complied X Orientation
	13.110-13.410	13.4100	28.46	20.53	18.70	1.45	40.51	-39.06	Complied Y Orientaiton Maximum Emissions
	13.710-14.010	13.7100	28.54	21.72	18.70	2.64	40.51	-37.87	Complied Y Orientaiton Maximum Emissions
	13.110-13.410	13.4100	25.56	24.29	18.70	5.21	40.51	-35.30	Complied Z Orientation
	13.710-14.010	13.7100	25.47	24.50	18.70	5.42	40.51	-35.09	Complied Z Orientation
Tested by:	Dieter Baldamus								
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009									
Measured QP = QP Reading + Antenna Factor + Cable Loss. (factors are already included in the measured peak)									
30m Adjusted QP = Measured QP - 40*LOG(30/10), as per FCC Part 15.31 (f)(2)									
Example:									
Freq:									
13.5616MHz	32.76	= 51.84-19.08							

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4.1.6 Photos



Figure 3 - Radiated Field Strength Emissions Test Setup O.A.T.S.

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4.1 Radiated Field Strength Emissions Section 15.225 d)

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

4.1.1 View of Test

Results	Complies (as tested per this report)				Date	06/04/2008			
Standard	FCC Part 15.225 d)								
Product Model	DSVII+ Turbo/Model#: 2011-00001		Serial#	DSVIISCBK073600583					
Configuration	See test plan for details								
Test Set-up	Tested on 10m O.A.T.S. placed on turn-table, see test plans for details								
EUT Powered By	230 VAC 50Hz	Temp	22°C	Humidity	34%	Pressure	1000mbar		
Frequency Range	13.56MHz-1.0GHz @ 10m								
Perf. Criteria	Below Limit o	Perf. Verification		Readings Under Limit					
Mod. To EUT	None	Test Performed By		Dieter Baldamus					

4.1.2 Test Procedure

Radiated field strength 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 9kHz to 30MHz was investigated with a loop antenna and then from 30MHz-1000MHz was investigated with Bilog antenna.

A preliminary emissions test was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 10 m OATS.

All spurious emissions between this frequency ranges were investigated and compared to the limits stated in section 15.209. Restricted bands of operation were also investigated as stated in section 15.205. Additional provisions stated in section 15.215 b) were also considered during this test.

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the radiated field strength emission test.

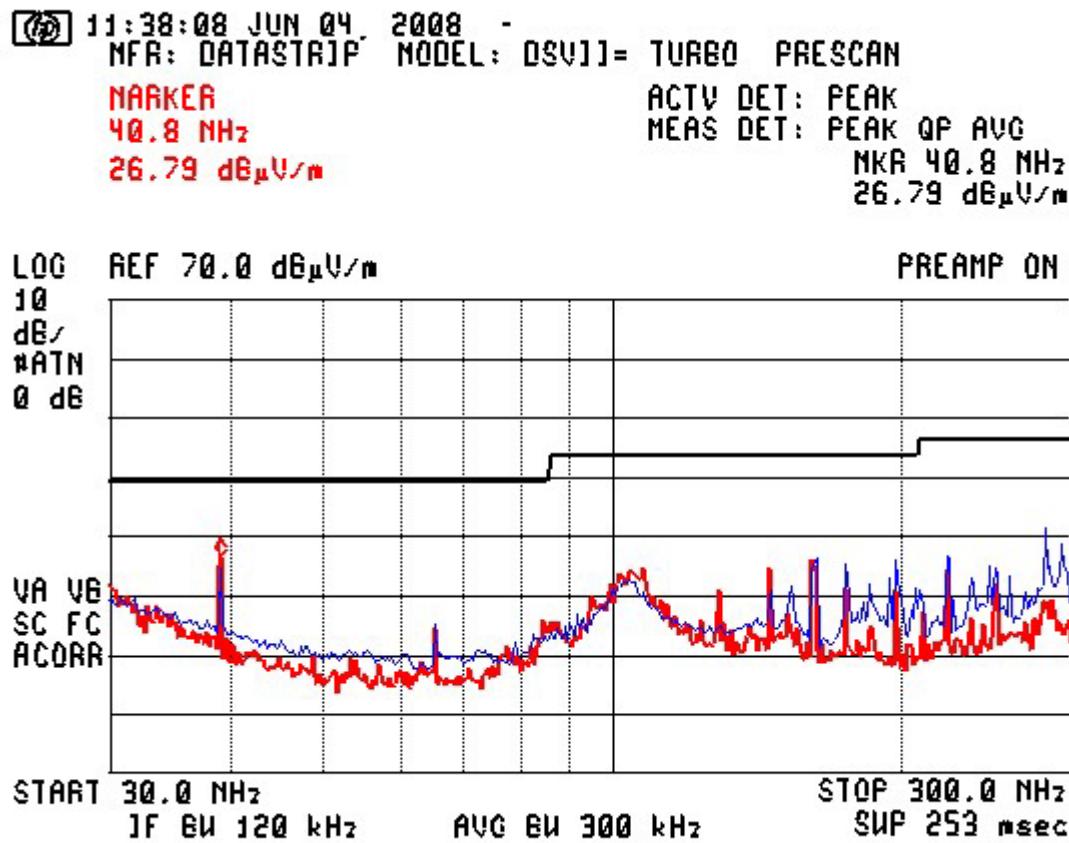
4.1.4 Final Test

All final radiated field strength emissions measurements were below (in compliance) the limits. No radiated field strength emissions were found within the restricted bands stated in section 15.205.

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4.1.5 Final Graphs

NOTES:

Radiated Emissions Prescan
 Vertical / Horizontal


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Report No.:

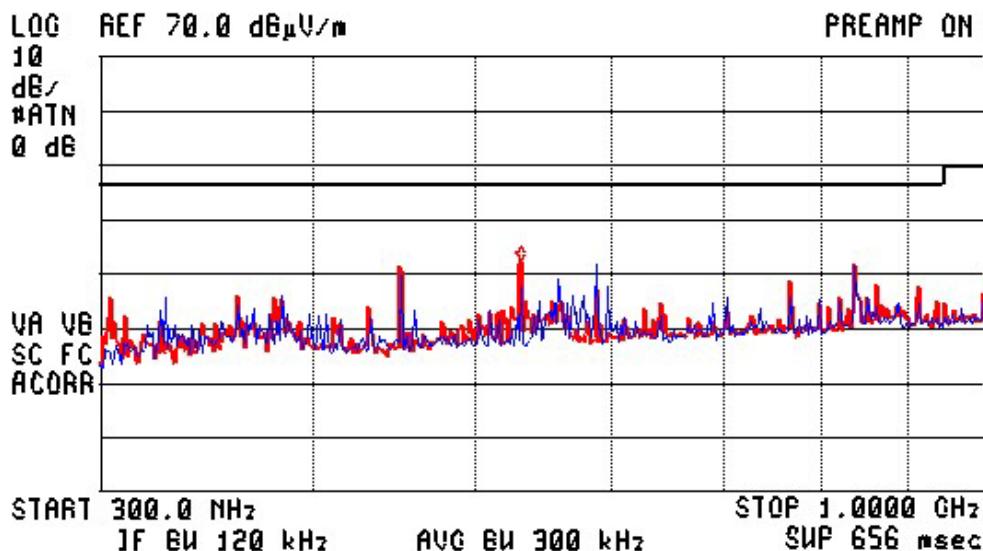
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NOTES:

Radiated Emissions Prescan
Vertical / Horizontal

11:39:07 JUN 04 2008 -
MFR: DATASTRIP MODEL: DSVII+ TURBO PRESCAN
START 300.0 MHz ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKA 535.3 MHz
32.25 dB μ V/m



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4.1.6 Final Tabulated Data<30MHz

Radiated Emissions Measurements						PRESCAN or FINAL:		Date:		
Standard:	47 CFR FCC Part 15.225(d) and FCC Part 15.209					Final		5/13/2008		
Device Tested:	Datastrip - DSVII+ Turbo					Distance:	10m	File Name:	08040501 Fundamental	
Mode:	Normal Operation									
Mount:	Table Top									
Modifications:	NA									
Harmonics < 30MHz										
RBW = 9kHz VBW=30kHz										
Meas #	Freq (MHz)	Measured Peak (dB μ V/m)	Quasi-Peak	Average	Antenna + Cable Correction Factor (included in measurement)	QuasiPeak Limit	Quasi Peak D	Result	Orientation	Comments
1	27.1215	28.5500	26.95	21.87	19.00	49.54	-22.59	Complied	X Orientation	
2	27.1235	29.3100	27.40	22.50	19.00	49.54	-22.14	Complied	Y Orientation	
3	27.1216	28.5700	26.99	21.45	19.00	49.54	-22.55	Complied	Z Orientation	
Tested by:	Dieter Baldamus									
TUV Rheinland of North America, Inc.	12 Commerce Road				Newtown, CT 06470	Tel:(203) 426-0888	Fax: (203) 426-4009			
	Measured QP = QP Reading +Antenna Factor + Cable Loss Factors.									
	(factors are already included in the measured peak)									

4.1.7 Prescan Tabulated Data >30MHz

Radiated Emissions Measurements						PRESCAN or FINAL:		Date:				
Standard:	47 CFR 15.29					Prescan		6/4/2008				
Device Tested:	Datastrip - DSVII+ Turbo					Distance:	3.0m	File:	08060401 RE Prescan.xls			
	Measured Level											
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit	Quasi-Peak Ξ	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	40.6818	28.96	25.08	19.60	40.00	-14.92	13.39	Prescan	Vertical	180	1.50	
2	67.7972	19.53	17.41	16.45	40.00	-22.59	6.35	Prescan	Vertical	180	1.50	
3	104.3404	30.42	26.31	23.68	43.50	-17.19	10.89	Prescan	Vertical	180	1.50	
4	149.1678	27.07	25.50	24.92	43.50	-18.00	10.82	Prescan	Vertical	180	1.50	
5	162.7321	25.76	23.52	22.80	43.50	-19.98	10.08	Prescan	Vertical	180	1.50	
6	176.2998	25.16	22.27	21.14	43.50	-21.23	9.54	Prescan	Vertical	180	1.50	
7	449.9963	25.87	23.14	21.31	46.00	-22.86	16.55	Prescan	Vertical	180	1.50	
8	533.3221	29.85	27.61	21.94	46.00	-18.39	18.13	Prescan	Vertical	180	1.50	
9	599.9850	33.53	31.15	26.39	46.00	-14.85	18.20	Prescan	Vertical	180	1.50	
10	733.3373	27.96	25.16	19.73	46.00	-20.84	19.11	Prescan	Vertical	180	1.50	
11	866.6591	33.97	31.46	29.96	46.00	-14.54	20.43	Prescan	Vertical	180	1.50	
Tested by:	Dieter Baldamus											
TUV Rheinland of North America, Inc.	12 Commerce Road				Newtown, CT 06470	Tel:(203) 426-0888	Fax: (203) 426-4009				REFCC15B.xls Revised 10MAR03	

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4.1.8 Final Tabulated Data>30MHz

Radiated Emissions Measurements							PRESCAN or FINAL:		Date:			
Standard:		47 CFR 15.225 and 15.209			Distance:		Final		6/4/2008			
Device Tested:		Datastrip - DSVII+ Turbo							File:			
Measured Level												
Meas #	Freq (MHz)	Measured Peak (dB _{UV} /m)	Measured Quasi-Peak (dB _{UV} /m)	Measured Average (dB _{UV} /m)	Quasi-Peak Limit (dB _{UV} /m)	Quasi-Peak D	Antenna + Cable Correction Factor (included in measured levels)	Result	Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	40.6818	40.95	38.19	38.34	40.00	-1.81	13.39	Complied	Vertical	356	1.00	
2	67.7972	37.23	31.65	25.30	40.00	-8.35	6.35	Complied	Vertical	54	1.00	
3	104.3404	38.24	32.33	27.94	43.50	-11.17	10.89	Complied	Vertical	112	1.00	
4	149.1678	33.70	30.30	27.40	43.50	-13.20	10.82	Complied	Vertical	184	1.10	
5	162.7321	37.43	35.67	34.89	43.50	-7.83	10.08	Complied	Vertical	188	1.12	
6	176.2998	37.53	33.48	33.05	43.50	-10.02	9.54	Complied	Vertical	130	1.00	
7	449.9963	30.38	26.60	21.89	46.00	-19.40	16.55	Complied	Vertical	24	1.00	
8	533.3221	41.37	39.92	35.25	46.00	-6.08	18.13	Complied	Vertical	121	1.00	
9	599.9850	48.52	44.67	40.06	46.00	-1.33	18.20	Complied	Horizontal	261	1.53	
10	733.3373	32.86	30.04	24.64	46.00	-15.96	19.11	Complied	Horizontal	261	1.53	
11	866.6591	36.94	34.36	32.68	46.00	-11.64	20.43	Complied	Horizontal	141	2.13	

Tested by: Dieter Baldamus

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

Measured QP = QP Reading +Antenna Factor + Cable Loss.
(factors are already included in the measured peak)

REFCC15B.xls Revised 10MAR03

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4.1.9 Photos



Figure 4 – Prescan Radiated Field Strength Emissions Test Setup (Semi-Anechoic Chamber)

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Figure 5 – Final Radiated Field Strength Emissions Test Setup (O.A.T.S.)

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4.2 Conducted Emissions

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other near by electronic equipment.

4.2.1 Over View of Test

Results	Complies (as tested per this report)			Date	06/05/2008			
Standard	FCC Part 15.207							
Product Model	DSVII+ Turbo/Model#: 2011-00001			Serial#	DSVIISCBK073600583			
Configuration	See test plan for details							
Test Set-up	Tested in shielded room EUT placed on table see test plans for details							
EUT Powered By	120V/60Hz	Temp	22° C	Humidity	45%	Pressure	1004mbar	
Frequency Range	150kHz – 30MHz							
Perf. Criteria	Below Limit	Perf. Verification		Readings Under Limit for L1 and L2				
Mod. to EUT	None	Test Performed By		Dieter Baldamus				

4.2.2 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 150kHz to 30MHz was investigated for conducted emissions.

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

4.2.3 Deviations

There were no deviations from the test methodology listed in the test plan for the conducted emission test.

4.2.4 Final Test

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

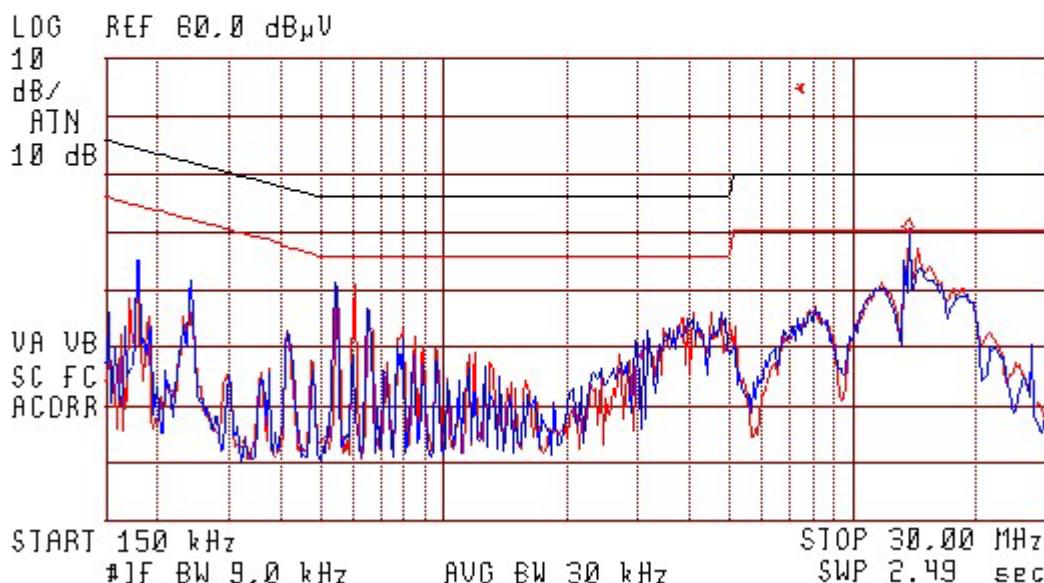
4.2.5 Final Graphs

NOTES:

Conducted Emissions @ 120V/60Hz
Line / Neutral



MFR: DATASTRIP MODEL: DSVII+ TURBO [X]L [X] N
 MARKER ACTV DET: PEAK
 13.71 MHz MEAS DET: PEAK QP AVG
 49.31 dB μ V MKR 13.71 MHz
 49.31 dB μ V



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4.2.6 Final Tabulated Data at 120V/60Hz

Conducted Emissions Measurements													
Standard:	47 CFR 15207										Date:	6/5/2008	
Device Tested:	Datastrip - DSVII+ Turbo										File:	.xls	
Signal Num	Freq	Peak Amp	QP Amp	Avg Amp	QP Limit	Avg Limit	Conductor	QP	QP Result	Avg	Average Result	Mode	
	MHz	dBuV	dBuV	dBuV	dBuV	dBuV		dB		dB			
1	0.1797	48.89	47.84	36.15	64.50	54.50		-16.66	Complied	-18.35	Complied		
2	0.2394	42.57	40.62	34.67	62.12	52.12		-21.50	Complied	-17.45	Complied		
3	0.5445	42.04	40.04	37.56	56.00	46.00		-15.96	Complied	-8.44	Complied		
4	0.5826	41.00	25.84	3.01	56.00	46.00		-30.16	Complied	-42.99	Complied		
5	4.0265	39.25	34.71	24.84	56.00	46.00		-21.29	Complied	-21.16	Complied		
6	8.0865	38.19	34.68	21.78	60.00	50.00		-25.32	Complied	-28.22	Complied		
7	11.4712	41.17	38.34	26.15	60.00	50.00		-21.66	Complied	-23.85	Complied		
8	13.5612	49.30	48.70	48.40	60.00	50.00		-11.30	Complied	-1.60	Complied	Maximum Emissions	
9	18.3723	39.23	36.19	26.39	60.00	50.00		-23.81	Complied	-23.61	Complied		
10	0.1696	47.33	46.47	34.87	64.98	54.98		-18.51	Complied	-20.11	Complied		
11	0.2269	40.20	38.15	33.49	62.56	52.56		-24.41	Complied	-19.07	Complied		
12	4.0159	37.14	34.13	25.21	56.00	46.00		-21.87	Complied	-20.79	Complied		
13	8.2530	37.26	34.86	24.99	60.00	50.00		-25.14	Complied	-25.01	Complied		
14	11.9999	40.49	36.75	26.26	60.00	50.00		-23.25	Complied	-23.74	Complied		
15	13.5615	49.10	49.10	48.70	60.00	50.00		-10.90	Complied	-1.30	Complied		
16	19.1275	36.79	32.57	24.24	60.00	50.00		-27.43	Complied	-25.76	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

CE22_B.xls Revised 21OCT2005

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4.2.7 Photos



Figure 6 –Conducted Emissions Test Setup (front)

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Figure 7 –Conducted Emissions Test Setup (back)

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4.3 Frequency Tolerance over Temperature and Voltage Variations

The frequency tolerance of the carrier signal shall be maintained within +/- .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.

4.3.1 Test Over View

Results	Complies (as tested per this report)			Date	06/11/2008					
Standard	FCC Part 15.225 e)									
Product Model	DSVII+ Turbo/Model#: 2011-00001			Serial#	DSVIISCBK073600583					
Configuration	See test plan for details									
Test Set-up	Tested in shielded room									
EUT Powered By	102VAC-138VAC	Temp	22° C	Humidity	45%	Pressure	1001mbar			
Perf. Criteria	0.01% of operating frequency		Perf. Verification	Readings within Limit						
Mod to EUT	None		Test Performed By	Dieter Baldamus						

4.3.2 Test Procedure

The EUT was placed in a temperature chamber for the temperature variation test. Reading were made as per ANSI C63.4

Voltage variations tests were performed connecting the AC/DC adapter to a variable power supply. The EUT has also a battery so the set-up included a new battery. Readings were made as per ANSI C63.4.

4.3.3 Deviations

There were no deviations from the test methodology listed in the test plan for the frequency tolerance test.

4.3.4 Final Test

The Frequency Tolerance Test was within the limits (in compliance) specified in the standard.

4.3.5 Final Data

Frequency Stability Test - Temperature Variations					
Standard:	FCC Part 15.225 e)			Date:	6/11/2008
Device Tested:	DSVII+Turbo			File:	08061101 FreqVar.xls
Customer:	Datastrip				
Temperature	Start-up	2min	5min	10min	Permitted Band Edge in MHz (+/-0.01%)
-20°C	13.56061	13.56066	13.56067	13.56072	13.5586-13.5614MHz
0°C	13.56079	13.56081	13.56082	13.56089	13.5586-13.5614MHz
55°C	13.56087	13.56091	13.56092	13.56095	13.5586-13.5614MHz
Tested by:	Dieter Baldamus				
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009					FCC TempStab.xls Revised 24APR08

Frequency Stability Test - Voltage Variations					
Standard:	FCC Part 15.225 e)			Date:	6/11/2008
Device Tested:	DSVII+Turbo			File:	08061101 FreqVar.xls
Customer:	Datastrip				
Temperature	Start-up	2min	5min	10min	Permitted Band Edge in MHz (+/-0.01%)
102 V(85%)	13.56087	13.56088	13.56088	13.56087	13.5586-13.5614MHz
120V (100%)	13.56088	13.56088	13.56085	13.56086	13.5586-13.5614MHz
138V (115%)	13.56090	13.56091	13.56090	13.56092	13.5586-13.5614MHz
Tested by:	Dieter Baldamus				
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009					FCC TempStab.xls Revised 24APR08

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4.3.6 Photos

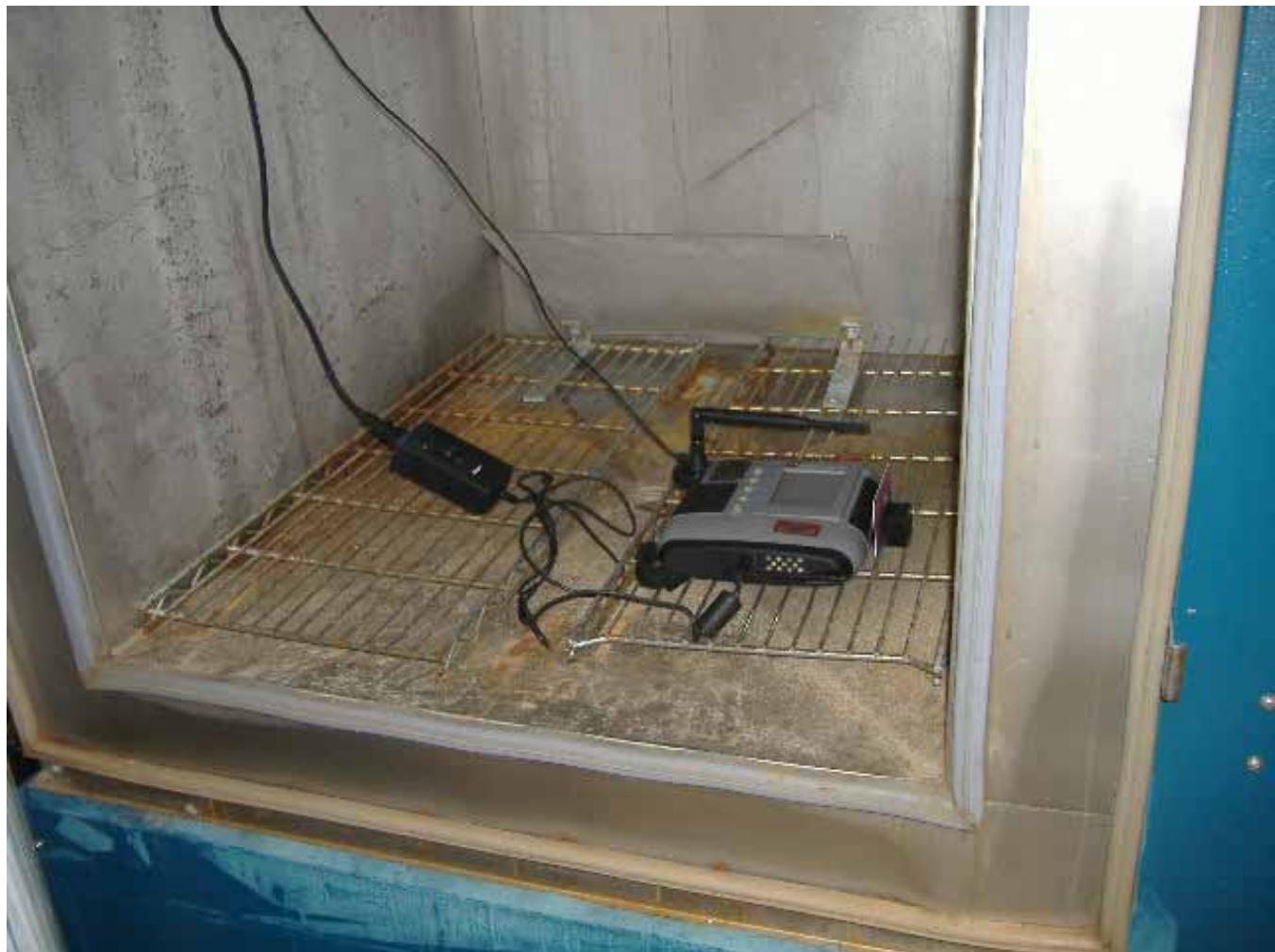


Figure 8 --20°C Temperature Test Setup

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Figure 9 –+50°C Temperature Test Setup

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Figure 10 –Voltage Variation Test Setup

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4.4 Band Edge Measurement

This test evaluates the potential for the EUT to cause voltage fluctuation and flicker impressed on the public AC low-voltage system.

4.4.1 Test Over View

Results	Complies (as tested per this report)			Date	08/12/2008			
Standard	FCC Part 215 c)/RSS-210							
Product Model	DSVII+ Turbo/Model#: 2011-00001			Serial#	DSVIISCBK073600583			
Configuration	See test plan for details							
Test Set-up	Tested in OATS EUT placed on table See test plan for details							
EUT Powered By	120V/60Hz	Temp	22° C	Humidity	45%	Pressure		
Perf. Criteria	6dB and 99% Band Edge		Perf. Verification	Readings within Limit				
Mod to EUT	None		Test Performed By	Dieter Baldamus				

4.4.2 Test Procedure

Radiated field strength 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. Testing was performed at a distance of 10 meters on the OATS Deviations. Reading were made at 6dB and 99% of the fundamental signal.

4.4.3 Deviations

There were no deviations from the test methodology listed in the test plan for the band edge measurement test.

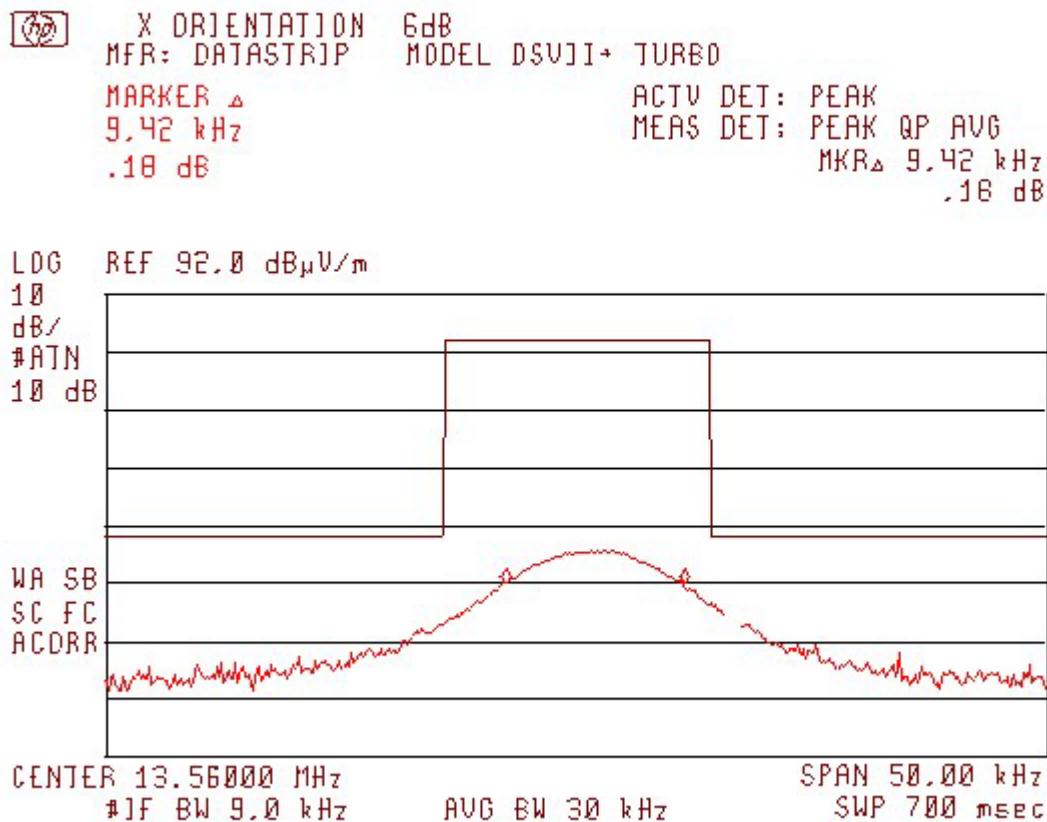
4.4.4 Final Test

The Band Edge Measurements were within the limits specified in the standard.

4.4.5 Final Graphs

NOTES:

Emission Bandwidth
6dB Measurement
X-Orientation



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Turbo

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NOTES:

Emission Bandwidth
99%dB Measurement
X-Orientation/Horizontal Mount

② X ORIENTATION 99%
MFR: DATASTRIP MODEL DSVII+ TURBO
MARKER ▲ ACTV DET: PEAK
37.86 kHz MEAS DET: PEAK QP AVG
.63 dB MKR▲ 37.86 kHz
.63 dB

LOG REF 92.0 dB μ V/m

10

dB/

#ATN

10 dB

WA SB

SC FC

ACDRR

CENTER 13.56000 MHz

#IF BW 9.0 kHz

AUG BW 30 kHz

SPAN 50.00 kHz

SWP 700 msec

NOTES:

Emission Bandwidth
6dB Measurement
Y-Orientation



Y ORIENTATION 6dB
 MFR: DATASTRIP MODEL DSVII+ TURBO
 MARKER ▲ ACTV DET: PEAK
 9.40 kHz MEAS DET: PEAK QP AVG
 -.20 dB MKR▲ 9.40 kHz
 -.20 dB

LOG REF 92.0 dB μ V/m

10

dB/

#ATN

10 dB

WA SB

SC FC

ACORR

CENTER 13.56000 MHz

#IF BW 9.0 kHz

AVG BW 30 kHz

SPAN 50.00 kHz

SWP 700 msec

NOTES:

Emission Bandwidth
99% Measurement
Y-Orientation



Y ORIENTATION 99%
MFR: DATASTRIP MODEL DSVII+ TURBO
MARKER Δ ACTV DET: PEAK
25.57 kHz MEAS DET: PEAK QP AVG
-.12 dB MKR Δ 25.57 kHz
-.12 dB

LOG REF 92.0 dB μ V/m

10

dB/

#ATN

10 dB

WA SB

SC FC

ACORR

CENTER 13.56000 MHz

#IF BW 9.0 kHz

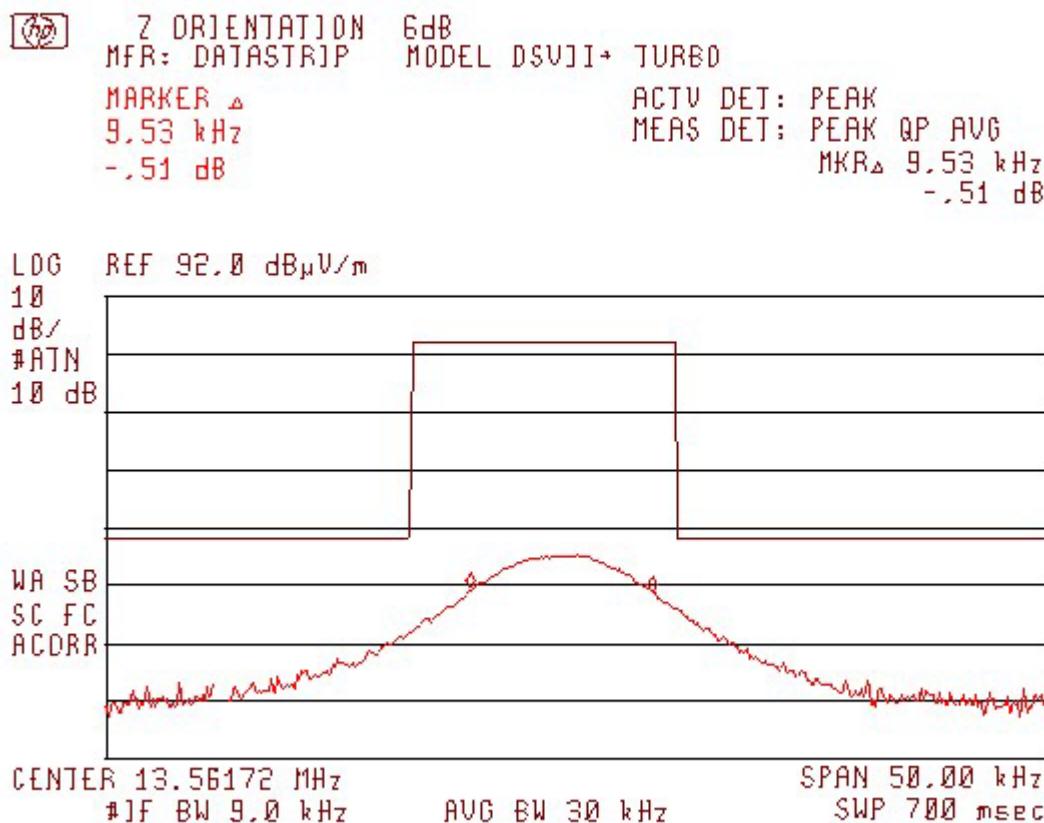
AVG BW 30 kHz

SPAN 50.00 kHz

SWP 700 msec

NOTES:

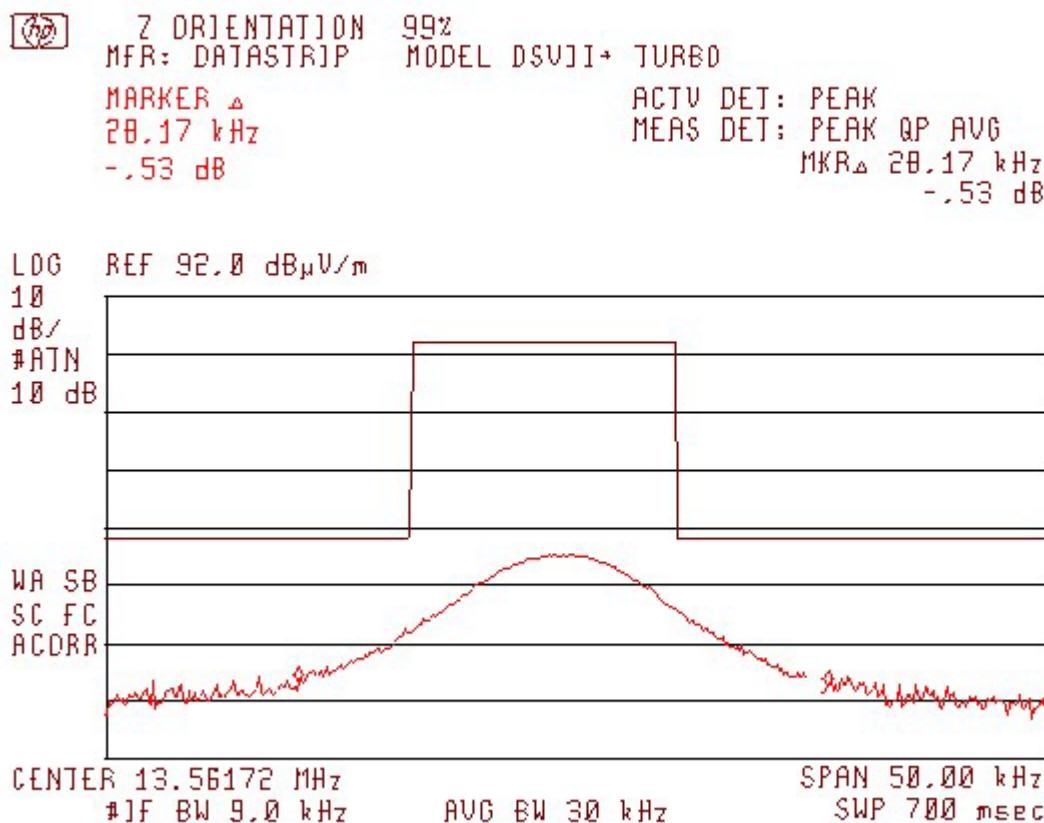
Emission Bandwidth
6dB Measurement
Z-Orientation



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NOTES:

Emission Bandwidth
99% Measurement
Z-Orientation



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4.4.6 Final Tabulated Data

Radiated Emissions Measurements										
Standard:	47 CFR FCC Part 15.215 c)/RSS-210				PRESCAN or FINAL:			Final	Date:	5/13/2008
Device Tested:	Datastrip - DSVII+ Turbo				Distance:			10m	File Name:	08061301Bandedge.xls
Mode:	Normal Operation									
Mount:	Table Top									
Modifications:	NA									
Measured Level										
Meas #	TX Band	Peak Measurement (dB μ V/m)	-6dB Low End (MHz)	-6dB High End (MHz)	6dB Measured Bandwidth (kHz)	-20dB High End (MHz)	+20dB High End (MHz)	99% Measured Bandwidth (kHz)	Result	Orientation (X,Y,Z)
RBW = 9kHz VBW=30kHz										
1	13.5608	48.31	13.5561	13.5655	9.4200	13.5491	13.5729	23.8000	Complied	X Orientation
2	13.5618	52.20	13.5563	13.5655	9.2600	13.5423	13.5799	37.6000	Complied	Y Orientation
3	13.5608	49.06	13.5559	13.5655	9.5300	13.5470	13.5752	28.1700	Complied	Z Orientation
Tested by:	Dieter Baldamus									
TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009										

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4.4.7 Photos



Figure 11 –Band Edge Measurement

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Appendix A

5 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

5.1 General Information

Client	Datastrip Products, Inc.
Address	1 Waterview Drive
Address	Shelton, CT 06484
Contact Person	Martin Doyle
Telephone	(203)922-9222
Fax	(203) 922-9334
e-mail	mdoyle@datastrip.net

5.2 Model(s) Name

DS ^{VII+} Turbo/Model#: 2011-00001

5.3 Type of Product

Biometric Smart Card Reader

5.4 Equipment Under Test (EUT) Description

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.

Contactless Smart Cards conforming to ISO 14443A are read by means of a 13.56 MHz data transceiver. The transceiver antenna is integral to the device and is not end-user accessible. Contactless Smart Cards derive the power required to operate their internal circuitry and transmit responses from the received 13.56 MHz data carrier.

The data transceiver system utilizes the same printed circuit antenna for transmission and reception. The antenna is composed of two counter-wound printed coils with one end of each made common. The transceiver integrated circuit drives the antenna, a closed-loop magnetically coupled circuit, differentially. The received signal is coupled into the receive section of the transceiver IC by means of a resistive divider network.

Data from or to the transceiver IC is passed to a Smart Card Controller IC, which in turn connects to the general system via an internal USB bus. Operating DC power for the entire Smart card subsystem is received from the internal USB bus.

5.5 Modifications

No modifications were needed to bring product into compliance.

5.6 Product Environment

<input type="checkbox"/>	Residential	<input type="checkbox"/>	Hospital
<input checked="" type="checkbox"/>	Light Industrial	<input type="checkbox"/>	Small Clinic
<input type="checkbox"/>	Industrial	<input type="checkbox"/>	Doctor's office
<input type="checkbox"/>	Other		

*Check all that apply

5.7 Countries

<input checked="" type="checkbox"/>	USA
<input type="checkbox"/>	Taiwan
<input type="checkbox"/>	Japan
<input type="checkbox"/>	Europe

*Check all that apply

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5.8 Applicable Documents

Standards	Description
Error! Reference source not found.	Radio Frequency Devices – Subpart C: Intentional radiators
FCC Part 15.225	Operation within the band 13.110-14.010 MHz.
FCC Part 15.225 a)	Field Strength Emissions within 13.553-13.567MHz
FCC Part 15.225 b)	Field Strength Emissions between 13.410 - 15.553MHz and 13.567 -13.710 MHz
FCC Part 15.225 c)	Field Strength Emissions between 13.110-13.410 MHz and 13.710 -14.010 MHz
FCC Part 15.225 d)	Field Strength Outside the 13.110-14.010MHz
FCC Part 15.225 e)	Frequency tolerance over -20 - +50 C at normal power supply and for 85% and 115% of rated supply voltage
FCC Part 15.225 f)	Frequency Powered tags
FCC Part 15.207	Conducted Emissions
FCC Part 15.205, Part 15.209 and Part 15.215 b)	Radiated Emissions
FCC part 15.215 c)	20dB Bandwith

5.9 General Product Information

Size	H	7.3"	W	7.3"	L	2.0"
Weight	2.1lbs		Fork-Lift Needed			No
Notes	None					

5.10 EUT Electrical Powered Information

5.10.1 Electrical Power Type

<input type="checkbox"/>	AC	<input checked="" type="checkbox"/>	DC	<input type="checkbox"/>	Batteries	<input type="checkbox"/>	Host -
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5.10.2 Electrical Power Information

Name	Type	Voltage		Frequency	Current	Notes
		min	max			
AC/Dc Adapter	DC	12	19	NA	2.0	NA
Notes	None					

5.11 EUT Modes of Operation

To set the EUT up for testing, the file dslogo_film.wmv should be copied to a Compact Flash storage card. From the desktop, double tap the touchscreen icon "My Computer". Double tap the "Storage Card 2" icon. Double tap the file dslogo_film.wmv Windows media Player 9 will start and the spinning Datastrip logo will be displayed. Pull down the Playback menu and select Repeat. The animation should run indefinitely.

5.12 EUT Clock/Oscillator Frequencies

<input checked="" type="checkbox"/>	Less than 108MHz	FCC – scan up to 1GHz
<input type="checkbox"/>	Less than 500MHz	FCC – scan up to 2GHz
<input type="checkbox"/>	Less than 1000MHz	FCC – scan up to 5GHz
<input type="checkbox"/>	Greater then 1000MHz	FCC – scan up to 5th Harmonic or 40GHz

5.13 Electrical Support Equipment

Type	Manufacture	Model	Connected To
None			

5.14 Non - Electrical Support Equipment

Item	Notes
None	

5.15 EUT Equipment/Cabling Information

EUT Port	Connected To	Location	Cable Type		
			Length	Shielded	Bead
DC Input	AC/DC Adapter	Bottom	1.5m	No	No
USB port (2)	None	Top	1.5m	No	No
USB Port 1.0	None	Top	1.5m	No	No
LAN	None	Top	1.5m	No	No

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5.16 EUT Test Program

Typical operating condition for the EUT would be power on, operating system loaded and desktop visible on the display. For RF Immunity testing, a moving video animation (such as dslogo_film.wmv) can be displayed on the screen. Continued motion of the animation indicates that the system is functioning normally. The animation should run continually for an indefinite period of time.

5.17 Monitoring of EUT during Testing

Visual observation of the EUT's display.

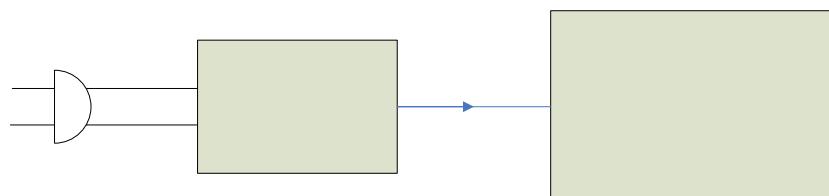
5.18 EUT Configuration

5.18.1 Description

The EUT is a handheld portable device. It can be operated while being held in the hand or lying flat on a desk or table top. The AC Adapter may or may not be used in either operating mode.

Configuration	Description
Configuration 1	Continuous Reading of ID Card
Notes	All configurations are the same except as noted above

5.18.2 Block Diagram



5.19 Constructional Data Form

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