Electromagnetic Compatibility Test Report

Prepared in accordance with

FCC Part 15, RSS-210

On

Portable Biometric Identification Terminal

DSV3-SP

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

Prepared by:

TUV Rheinland of North America, Inc.

Client:	Datastrip Products, Inc. 1 Waterview Drive Shelton, CT 06484	Martin Doyle Tel: (203) 225-9184 x4116 Fax: (203) 225-9260 Email: mdoyle@datastrip.net	
Identification:	Portable Biometric Identification Terminal	***Serial No.:***	DSV3SPAK083300020
Test item:	**DSV3-SP**	***Date tested:***	30 June - 3 July 2009
Testing location:	TUV Rheinland of North America 762 Park Avenue Youngsville, NC 27596-9470 U.S.A.	Tel: (919) 554-3668 Fax: (919) 554-3542	
Test specification:	**Emissions:** FCC Part 15, Subpart C, RSS-210 Issue 7: FCC Parts 15.205, 15.209, 15.215(b), FCC Part 15.225 and RSS-210 A2.6, FCC Part 15.225(a) and RSS-210 A2.6(a), FCC Part 15.225(b) and RSS-210 A2.6(b), FCC Part 15.225(c) and RSS-210 A2.6(c), FCC Part 15.225(d) and RSS-210 A2.6(d), FCC Part 15.225(e) and RSS-210 A2.6, FCC Part 15.225(f) and RSS-210 Part 2.5, FCC Part 15.215 (c) and RSS-210		
Test Result	**The above product was found to be Compliant to the above test standard(s)**		
tested by: Mark Ryan		***reviewed by:*** Robert Richards	
30 July 2009 ***Date*** ***Signature***		Digitally signed by Bob Richards Date: 2009.07.30 11:42:04 -04'00' 30 July 2009 ***Date*** ***Signature***	
Other Aspects:	**None**		

Abbreviations: OK, Pass, Compliant, Complies = passed
Fail, Not Compliant, Does Not Comply = failed
N/A = not applicable

FC	NVLAP	**Industry Canada**
90552 and 100881	**NVLAP Lab Code (200094-0)**	**IC-2932H**

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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 30 June - 3 July 2009 on the Portable Biometric Identification Terminal, Model No. DSV3-SP, 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**	Tel: (203) 225-9184 x4116	**Contact**	Martin Doyle
		Fax	(203) 225-9260	**e-mail**	mdoyle@datastrip.net

Description	Portable Biometric Identification Terminal	**Model Number**	DSV3-SP
Serial Number	DSV3SPAK083300020	**Test Voltage/Freq.**	120VAC / 60Hz
Test Date Completed:	30 June - 3 July 2009	**Test Engineer**	Mark Ryan

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 Issue 7 Standard	Low-Power Licence-exempt Radiocommunication Devices Category I Equipment	See called out basic standards below	See Below	**Complies**
FCC Parts 15.205, 15.209, 15.215(b)	Radiated Emissions	Below limit of section 15.205, 15.209(a)	Below Limit	Complies
FCC Part 15.207	Conducted Emissions	Below limit of section 15.207(a)	Below Limit	Complies
FCC Part 15.215 (c) RSS-210	20 dB Bandwidth 99% Power Bandwidth	Contained within the Frequency Band	Within Limit	Complies
FCC Part 15.225 and RSS-210 A2.6	Operation within the band 13.110 – 14.01 MHz	See called out basic standards below	Below Limit	Complies
FCC Part 15.225(a) and RSS-210 A2.6(a)	Field strength Emissions within 13.553 – 13.567 MHz	15,848 µV/m at 30m 84 dBµV/m at 30m	Below Limit	Complies
FCC Part 15.225(b) and RSS-210 A2.6(b)	Field strength Emissions within 13.410 – 13.553 MHz and 13.567 - 13.710	334 µV/m at 30m 50.5 dBµV/m at 30m	Below Limit	Complies
FCC Part 15.225(c) and RSS-210 A2.6(c)	Field strength Emissions within 13.110 – 13.410 MHz and 13.710 - 14.010	106 µV/m at 30m 40.5 dBµV/m at 30m	Below Limit	Complies
FCC Part 15.225(d) and RSS-210 A2.6(d)	Field strength outside the 13.110 - 14.010 MHz band	Shall not exceed the limits of FCC Part 15.209	Below Limit	Complies
FCC Part 15.225(e) and RSS-210 A2.6	Frequecny tolerance over -20ºC to +50ºC 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) and RSS-210 Part 2.5	Frequency Powered Tags	Not Applicable: Tags are not powered.	NA	Complies

2 Laboratory Information

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 762 Park Avenue, Youngsville, NC 27596-9470 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 90552 and 100881). 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: 200094-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Industry Canada

Registration No.: IC-2932H 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.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland at the 762 Park Ave. Youngsville, N.C 27596 address has been assessed and approved in accordance with the Regulations for Voluntary Control Measures. (Registration No. R-1174, R-1679, C-1790 and C-1791).

2.1.5 Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBµV/m) = RAW - AMP + CBL + ACF

Where: RAW = Measured level before correction (dBµV)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

2.1.6 Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

25 dBuV/m + 17.5 dB – 20 dB + 1.0 dB = 23.5 dBuV/m

2.2 Measurement Uncertainty Emissions

	U_{lab}	U_{cispr}
Radiated Disturbance @ 10m		
30 MHz – 1,000 MHz	3.3 dB	5.2 dB
Conducted Disturbance @ Mains Terminals		
150 kHz – 30 MHz	1.18 dB	3.6 dB
Disturbance Power		
30 MHz – 300 MHz	3.88 dB	4.5 dB

Measurement Uncertainty Immunity

The estimated combined standard uncertainty for harmonic current and flicker measurements is ± 2.5 %
The estimated combined standard uncertainty for ESD immunity measurements is 4.10 %
The estimated combined standard uncertainty for radiated immunity measurements is ± 2.05 dB
The estimated combined standard uncertainty for EFT fast transient immunity measurements is ± 2.92 %
The estimated combined standard uncertainty for surge immunity measurements is ± 2.92 %
The estimated combined standard uncertainty for conducted immunity measurements is ± 1.83
The estimated combined standard uncertainty for power frequency magnetic field immunity measurements is ± 5.8 %
The estimated combined standard uncertainty for voltage variation and interruption measurements is ± 1.74 %

The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria are not based on measurement uncertainty.

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
Ant. BiconiLog	Chase	CBL6140A	1108	13-Jun-08	13-Jun-10	RE
Antenna Loop	EMCO	6502	3336	17-Jun-08	17-Jun-10	RE
Receiver, EMI	Rohde & Schwarz	ESIB40	100043	09-Jun-08	09-Jun-09	RE
Cable, Coax	Andrew	FSJ1-50A	003	22-Jan-09	22-Jan-10	RE
Cable, Coax	Andrew	FSJ1-50A	030	22-Jan-09	22-Jan-10	RE
Cable, Coax	Andrew	FSJ1-50A	045	22-Jan-09	22-Jan-10	RE
Spectrum Analyzer	Agilent Tec.	E7405A	US39440157	02-Dec-08	02-Dec-09	CE
LISN 15-18 (NSLK 8126)	Schwarzbeck Mess-Electronik	NSLK 8126	003885	02-Feb-09	02-Feb-10	CE
Transient Limiter	Schaffner	CFL-9206	1649	23-Jan-09	23-Jan-10	CE
Cable, Coax	Pasternack	RG-223	051	22-Jan-09	22-Jan-10	CE
Meter, Multi	Fluke	179	90580752	02-Dec-08	02-Dec-09	ALL
AC Source	Elgar	SW1750A	0114A1040	03-Dec-08	03-Dec-09	PLIH
Isolation Transformer	Solar Electronics	6220-1A	None	CNR II	CNR II	PLIH

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, PLIH=Power Line Inter-Harmonics

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

4 Emissions

4.1 Radiated Emissions

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

Except for a fraction of a second pause, The EUT is transmitting at all times, so there will be no Parts 15.107 and 15.109 or ICES-003 applicable to this device.

4.1.1 Over View of Test

Results	**Complies** (as tested per this report)					**Date**	01 July 2009
Standard	FCC Parts 15.205, 15.209, 15.215(b)						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
Configuration	See test plan for details						
Test Set-up	Tested in compliant 5m chamber, placed on turn-table, see test plans for details						
EUT Powered By	120VAC / 60Hz	**Temp**	78 ºF	**Humidity**	35%	**Pressure**	997 mbar
Frequency Range	150 kHz to 30 MHz at 1m, 30 MHz to 1GHz at 3m						
Perf. Criteria	(Below Limit)		**Perf. Verification**		Readings Under Limit		
Mod. to EUT	None		**Test Performed By**		Mark Ryan		

4.1.2 Test Procedure

Radiated and FCC 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 150 kHz to 1 GHz was investigated for radiated emissions.

Radiated emission testing was performed at a distance of 1 meter for the range from 150 kHz to 30 MHz, and at a distance of 3 meters for the range from 30 MHz to 1 GHz in the compliant 5m chamber in order to identify the specific frequencies for which these measurements will be made.

4.1.3 Deviations

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

4.1.4 Final Test

Since Section 4.5 of this report contains this data, please refer to that section.

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**	01 July 2009
Standard	FCC Parts 15.205, 15.209, 15.215(b)						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
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	120VAC / 60Hz	**Temp**	78 ºF	**Humidity**	35%	**Pressure**	997 mbar
Frequency Range	150 kHz to 30 MHz						
Perf. Criteria	(Bellow Limit)	**Perf. Verification**	Readings Under Limit for L1 & Neutral				
Mod. to EUT	None	**Test Performed By**	Mark Ryan				

4.2.2 Test Procedure

Conducted and FCC 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 150 kHz to 30 MHz 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

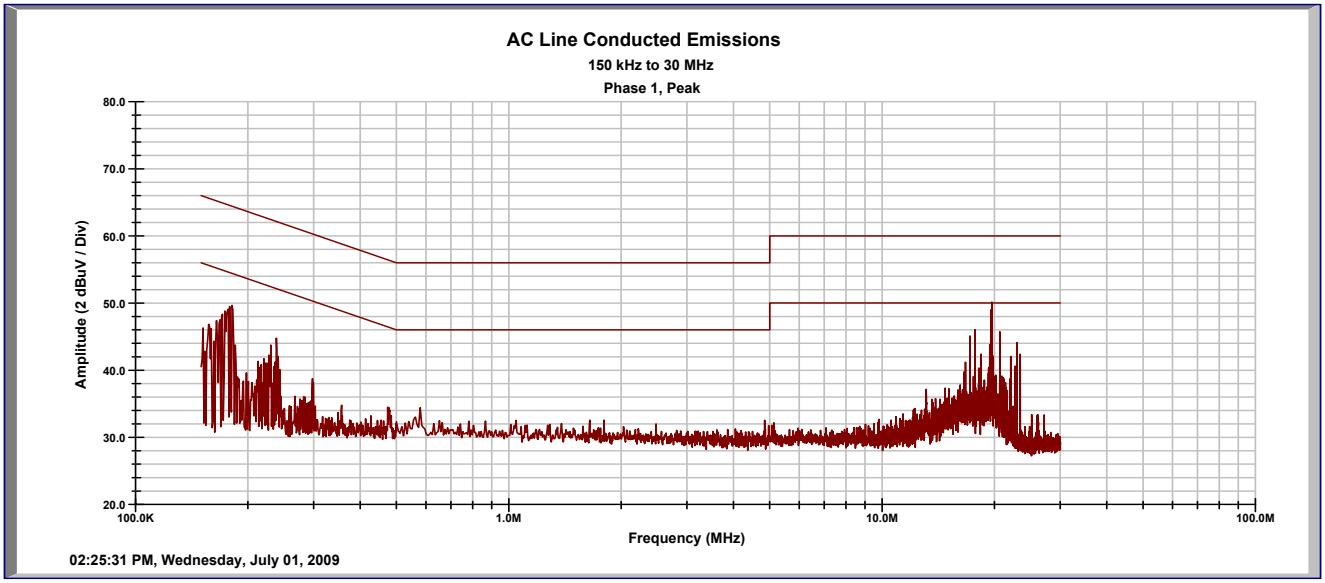
There were no deviations from the test methodology listed in the test plan for the conducted emission test.

4.2.4 Final Test

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

4.2.5 Final Graphs and Tabulated Data

Conducted Emissions @ 120V/60Hz
Line 1



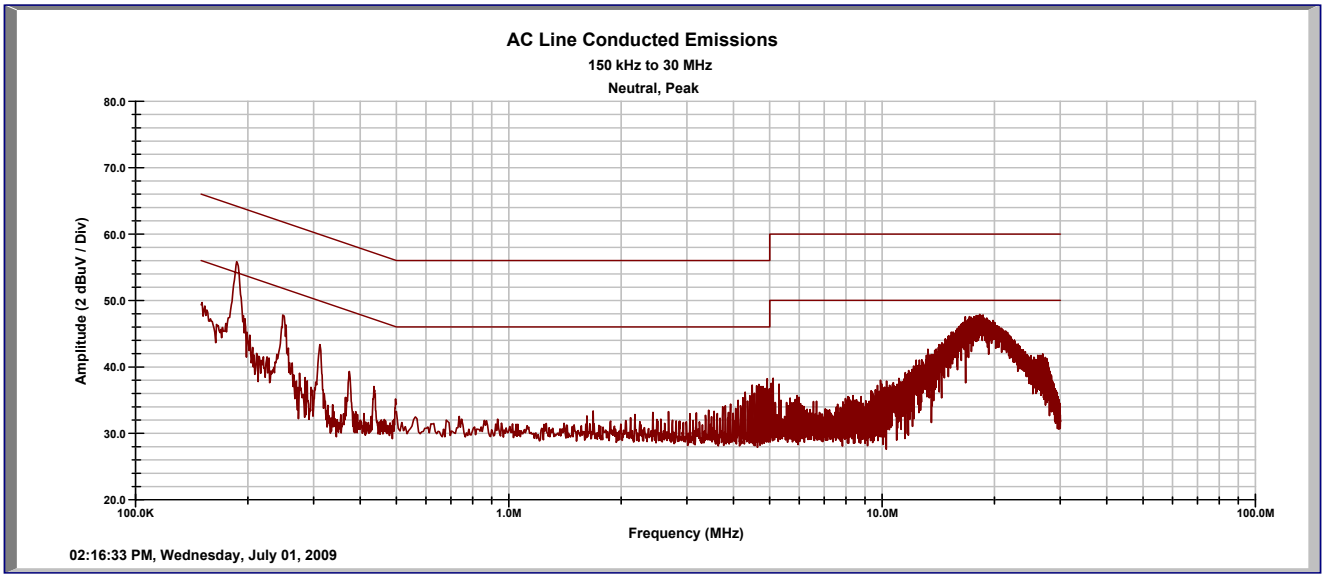
Freq (MHz)	ID (1,2,3,N)	Quasi (dBuV)	Ave (dBuV)	Loss (dB)	T Limiter (dB)	Limit (dBuV)	Limit (dBuV)	Margin (dB)	Margin (dB)
0.18	1	30.45	12.18	0.03	9.97	64.49	54.49	-24.04	-32.31
0.24	1	22.52	10.73	0.03	9.99	62.17	52.17	-29.63	-31.42
0.30	1	16.93	9.93	0.03	10.00	60.24	50.24	-33.28	-30.28
18.85	1	16.34	5.58	0.30	10.43	60.00	50.00	-32.93	-33.69
19.54	1	16.72	5.68	0.31	10.42	60.00	50.00	-32.55	-33.59
22.98	1	12.67	6.48	0.33	10.58	60.00	50.00	-36.41	-32.60

Quasi Spec Margin = Quasi FIM + Cable Loss + LISN CF - Quasi Limit ± Uncertainty
Ave Spec Margin = Ave FIM + Cable Loss + LISN CF - Ave Limit ± Uncertainty

Notes:

Conducted Emissions @ 120V/60Hz

Neutral



Freq (MHz)	ID (1,2,3,N)	Quasi (dBuV)	Ave (dBuV)	Loss (dB)	T Limiter (dB)	Limit (dBuV)	Limit (dBuV)	Margin (dB)	Margin (dB)
0.18	N	27.50	11.37	0.03	9.96	64.68	54.68	-27.19	-33.32
0.24	N	22.79	10.47	0.03	9.98	62.13	52.13	-29.33	-31.65
0.44	N	15.21	9.31	0.04	10.03	57.06	47.06	-31.78	-27.68
4.92	N	13.01	6.97	0.15	0.00	56.00	46.00	-32.61	-28.65
26.94	N	21.36	10.75	0.37	10.05	60.00	50.00	-28.23	-28.84
27.34	N	10.84	6.42	0.37	10.06	60.00	50.00	-38.74	-33.16

Quasi Spec Margin = Quasi FIM + Cable Loss + LISN CF - Quasi Limit ± Uncertainty
Ave Spec Margin = Ave FIM + Cable Loss + LISN CF - Ave Limit ± Uncertainty

Notes:

4.3 Band Width Measurement - FCC Part 15.215(c) and RSS-210

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3.1 Test Over View

Results	**Complies** (as tested per this report)				**Date**	01 July 2009	
Standard	FCC Part 15.215 (c) and RSS-210						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
Configuration	See test plan for details						
Test Set-up	Tested in temperature chamber. See test plans for details						
EUT Powered By	120VAC / 60Hz	**Temp**	78 ºF	**Humidity**	35%	**Pressure**	997 mbar
Perf. Criteria	0.01% of the operating frequency		**Perf. Verification**		Readings within Limit		
Mod to EUT	None		**Test Performed By**		Mark Ryan		

4.3.2 Test Procedure

Radiated field strength emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT Configuration. Testing was performed, using the worst-case orientation, at a distance of 1 meter in the compliant 5m chamber. Measurements made were the 20dB and 99% Power Bandwidths.

4.3.3 Deviations

There were no deviations from the test methodology listed for this test.

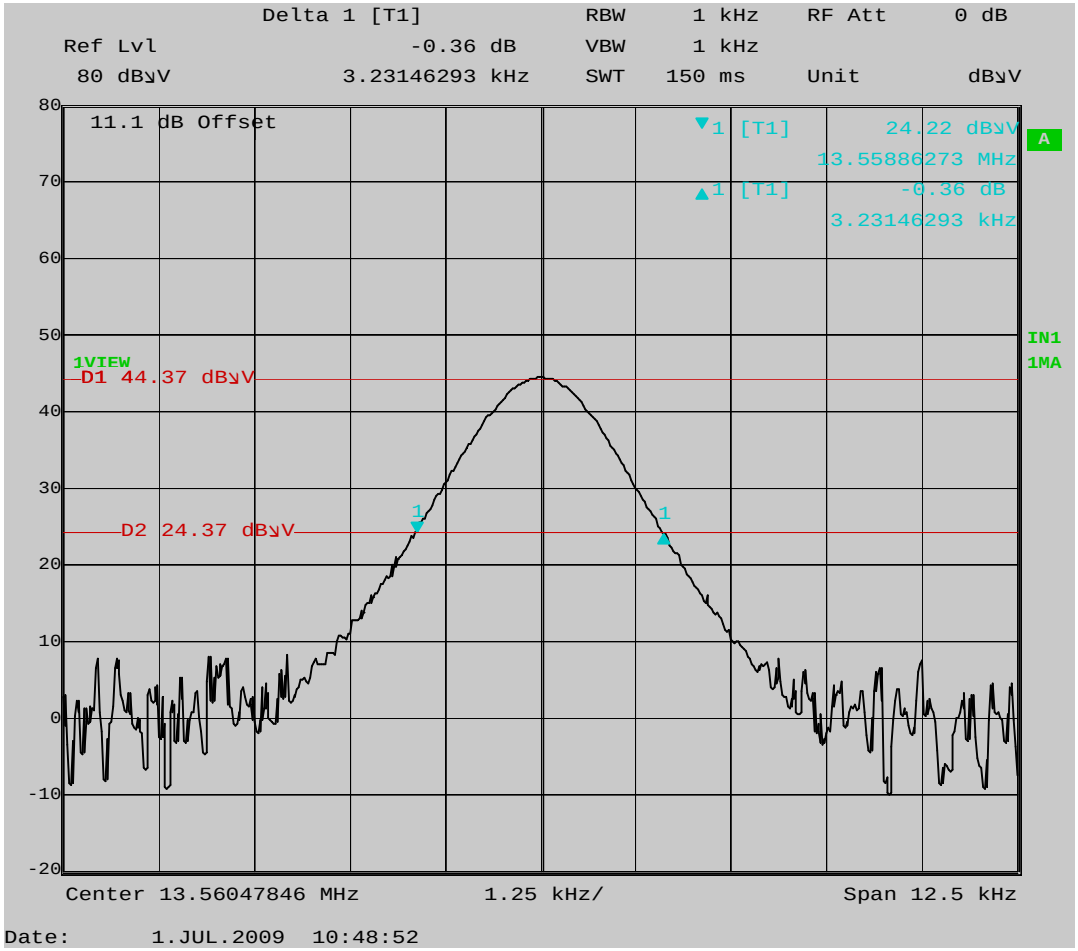
4.3.4 Final Test

The Frequency Tolerance was within the limits (in compliance) as specified in FCC Part 15.215(c).

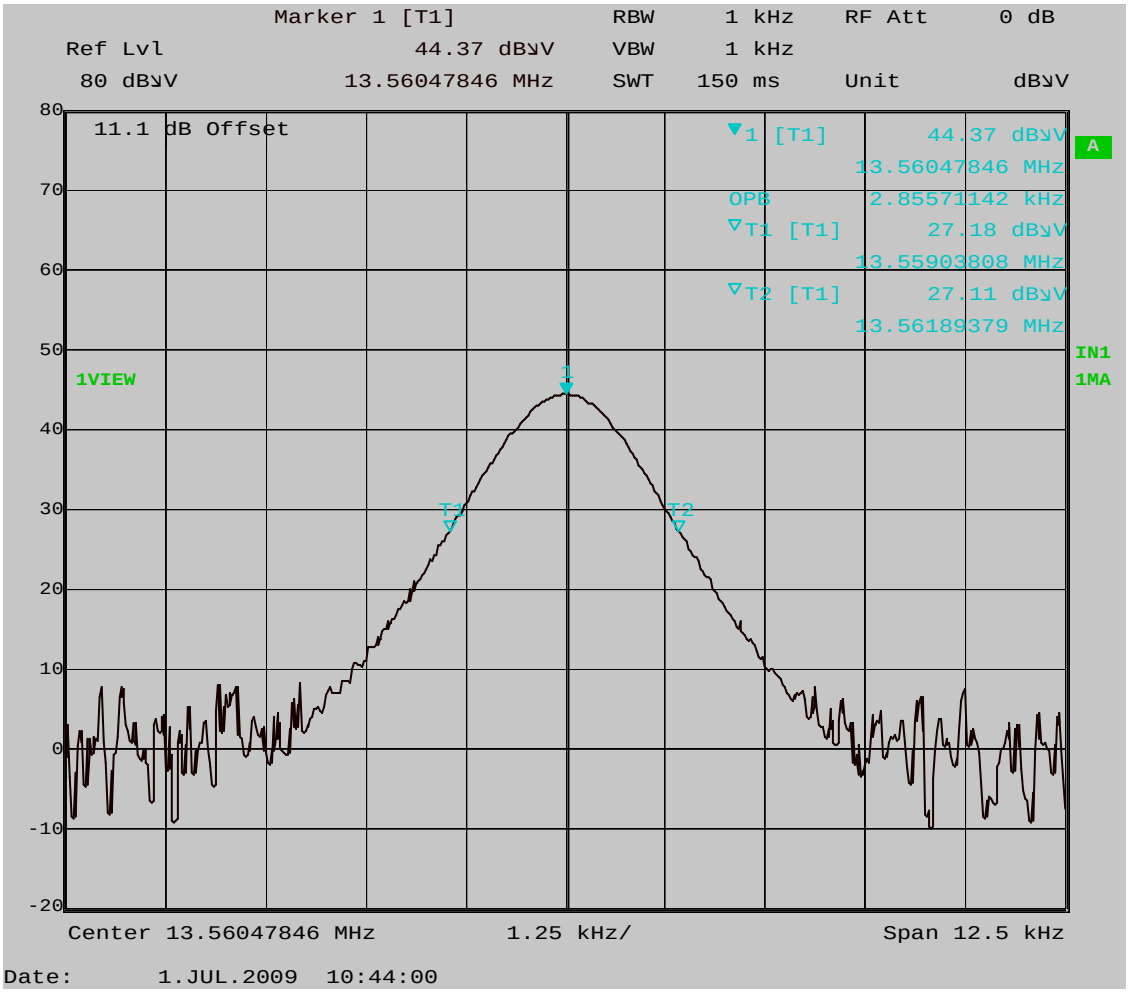
4.3.5 Final Test Data

Band width	Frequency (in kHz)	Results
20dB	3.23	Complies
99% PBW	2.86	Complies

4.3.6 Final graphs



20 dB Bandwidth = 3.23 kHz



99% Power Bandwidth = 2.86 kHz

4.4 Radiated Field Strength Emissions FCC Parts 15.225 (a), (b) and (c)

(a) The field strength of any emissions within the band 13.553 to 13567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

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

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

4.4.1 Test Over View

Results	**Complies** (as tested per this report)				**Date**	01 July 2009	
Standard	FCC Parts 15.225(a), (b), (c) and RSS-210 A2.6(a), (b), (c)						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
Configuration	See test plan for details						
Test Set-up	Tested in compliant 5m chamber, EUT placed on table See test plan for details						
EUT Powered By	120VAC / 60Hz	**Temp**	78 ºF	**Humidity**	35%	**Pressure**	997 mbar
Perf. Criteria	Below Limit		**Perf. Verification**		Readings under Limit		
Mod to EUT	None		**Test Performed By**		Mark Ryan		

4.4.2 Test Procedure

The frequency range from 13.110 MHz to 14.010 MHz was investigated in three orientations for worst-case radiated field strength emissions. Radiated field strength emissions were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. Testing was performed in a compliant 5m chamber the. The measurement distance was 1m for all frequencies below 30MHz, and 3m for 30MHz and all frequencies above. The limits were adjusted for the shorter measurement accordingly.

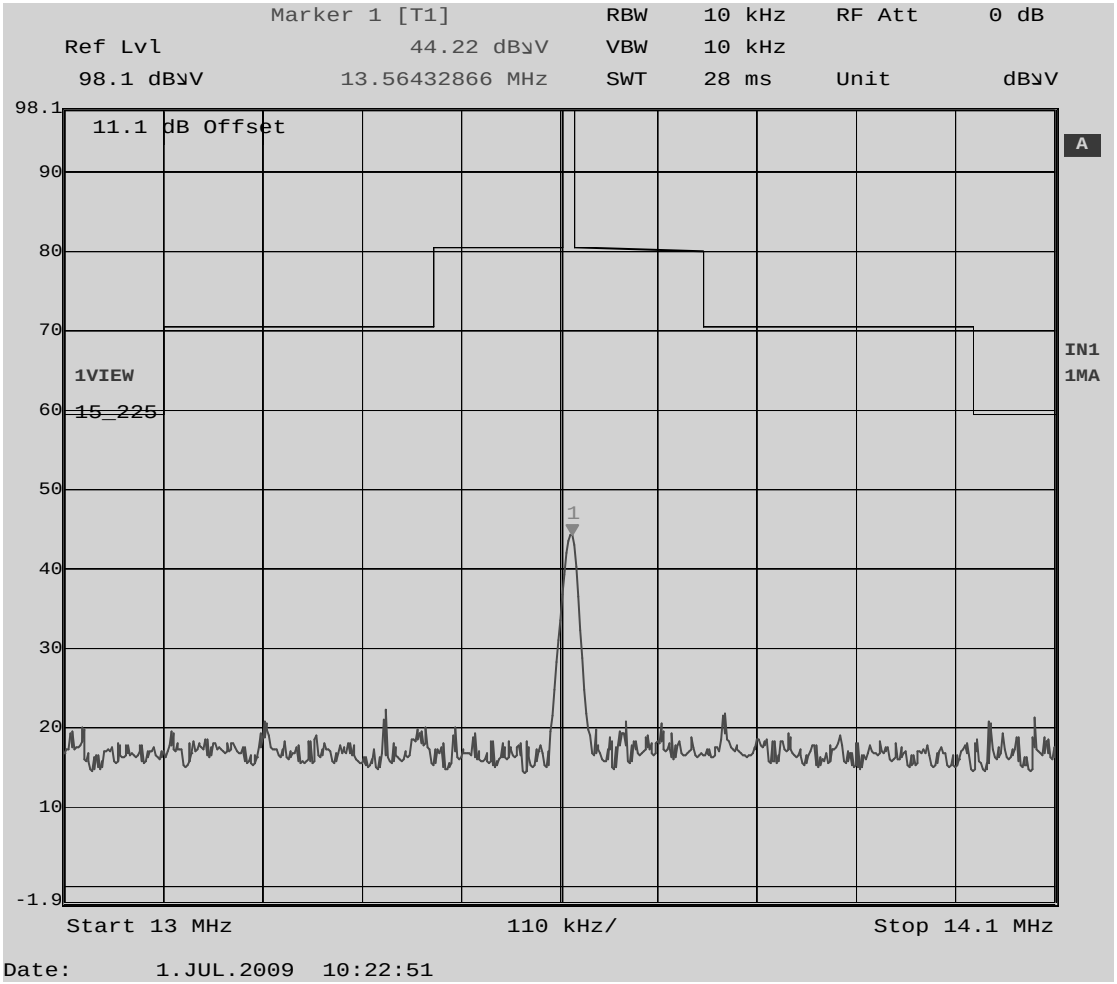
4.4.3 Deviations

The H-Field Emissions from 150kHz to 30MHz were too low to measure at 30m. The loop antenna was moved to 1m measuring distance, and the limit was adjusted by using the formula: 20log(30m / 1m) and 29.5 was added to the limit value.

4.4.4 Final Test

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

4.4.5 Final Field Strength Data



Frequency Mask to include FCC Parts 15.225(a), (b), (c), and (d)

Note: Limits shown were converted from µV/m at 30m to dBµV /m at 1 m measurement distance. The plot also includes 11.1 dB of correction factors for at 1m, for this band.

4.4.6 Final Data

All peak emissions are more than 20 dB below the limit. The limit was adjusted for dBµV at 1m measurements by using the following formula: 1m Limit = 20log(10m limit in µV) + 20log(30m / 1m)

For example the limit between 13.110 MHz and 14.010 MHz is 15,848µV at 30m, therefore:

The 1 m Limit = 20*log(15,848) + 20*log(30/1) = 84 + 29.5 = 114 dBµV (values rounded up)

Regardless, the 44.22 dBµV/m emissions at 1m is 39.8dB below the 84 dBµV/m limit at 30m

4.5 Radiated Field Strength Emissions FCC Part 15.225(d)

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

4.5.1 Test Over View

Results	**Complies** (as tested per this report)					**Date**	01 July 2001
Standard	FCC Part 15.225(d) and RSS-210 A2.6(d)						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
Configuration	See test plan for details						
Test Set-up	Tested in shielded room EUT placed on table See test plan for details						
EUT Powered By	120VAC / 60Hz	**Temp**	78 ºF	**Humidity**	35%	**Pressure**	997 mbar
Frequency Range							
Perf. Criteria	Below Limit		**Perf. Verification**		Readings Under Limit		
Mod to EUT	None		**Test Performed By**		Mark Ryan		

4.5.2 Test Procedure

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

The frequency range from 150 kHz to 30 MHz was investigated with a loop antenna and then from 30 MHz to 1000 MHz was investigated using a Bilog antenna.

A preliminary emission scan was performed in order to identify the specific frequencies for which these measurements were made at 3 meters in the 5 meter compliant chamber. Limits were adjusted for 3 meter measurement distance where needed.

All spurious emission between these frequency ranges were investigated and compared to the limits stated in section 12.209. Restricted bands of operation were also investigated as stated in section 15.205. The additional provisions stated in section 15.215(b) were also considered during this test.

4.5.3 Deviations

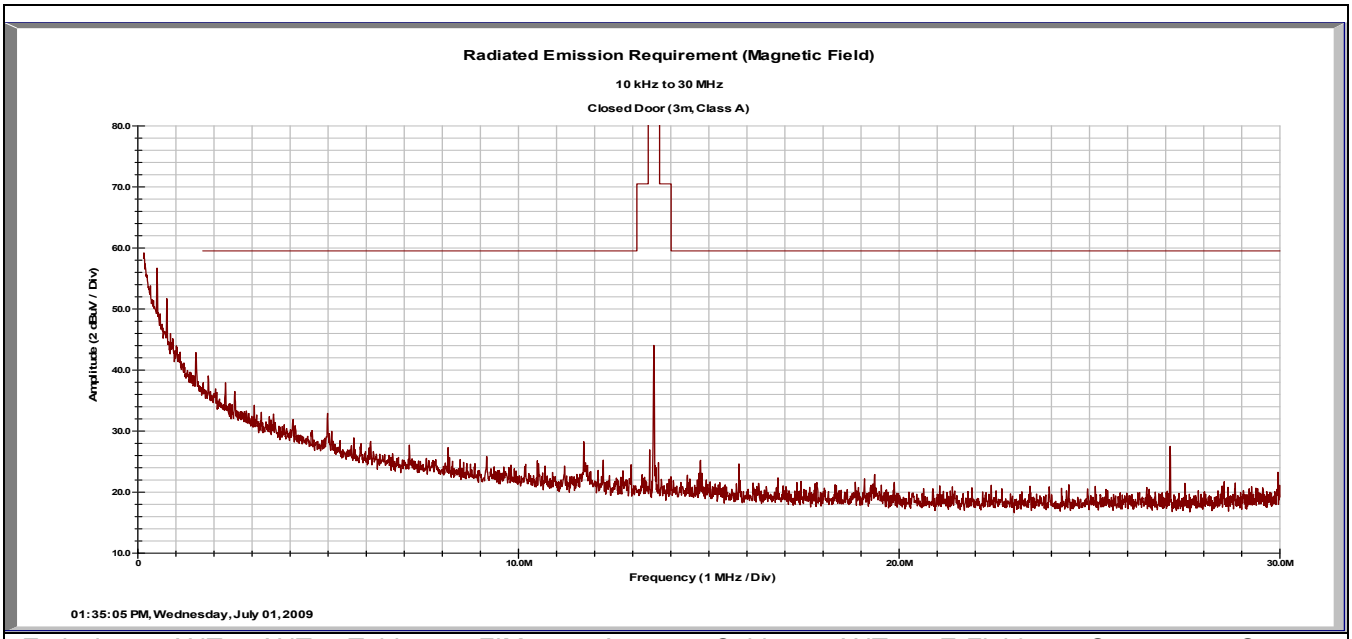
There were no deviations from the test methodology listed in the test plan for this test.

4.5.4 Final Test

All radiated field strength emissions measurements were below (in compliance with) the 15.209 limits, including those not in the restricted bands as stated in part 15.205.

4.5.5 Final Graphs and Tabulated Data

Radiated Emissions – Worst Case
3 Orientations investigated.



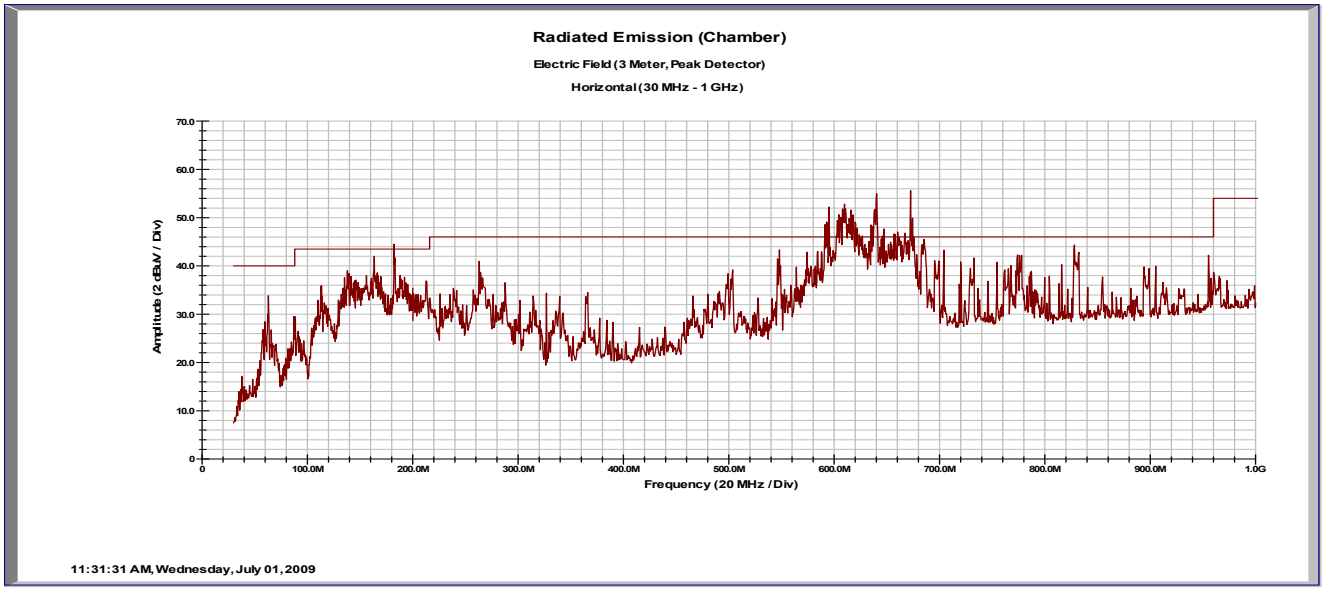
Emission Freq (MHz)	ANT Polar (P/p)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBµV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBµV/m)	Spec Limit (dBµV/m)	Spec Margin (dB)
13.56	‖	1	216	23.23	0.00	0.39	10.57	34.19	114.00	-79.81
13.56	⊣	1	120	23.71	0.00	0.39	10.57	34.67	114.00	-79.33
13.56	‖	1	86	32.93	0.00	0.39	10.57	43.89	114.00	-70.11
13.56	⊣	1	182	31.00	0.00	0.39	10.57	41.96	114.00	-72.04
13.56	‖	1	183	33.35	0.00	0.39	10.57	44.31	114.00	-69.69
13.56	⊣	1	245	29.84	0.00	0.39	10.57	40.80	114.00	-73.20

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: Antenna Orientation: ‖ = Parallel, ⊣ = Perpendicular
Signal shown in **RED** is Orientation 1
Signal shown in **GREEN** is Orientation 2
Signal shown in **BLUE** is Orientation 3
Limits shown were adjusted from µV/m at 30m to dBµV/m at 1 m measurement distance.
Peak is approx QP +1, Ave is approx QP-1

Radiated Emissions
Horizontal



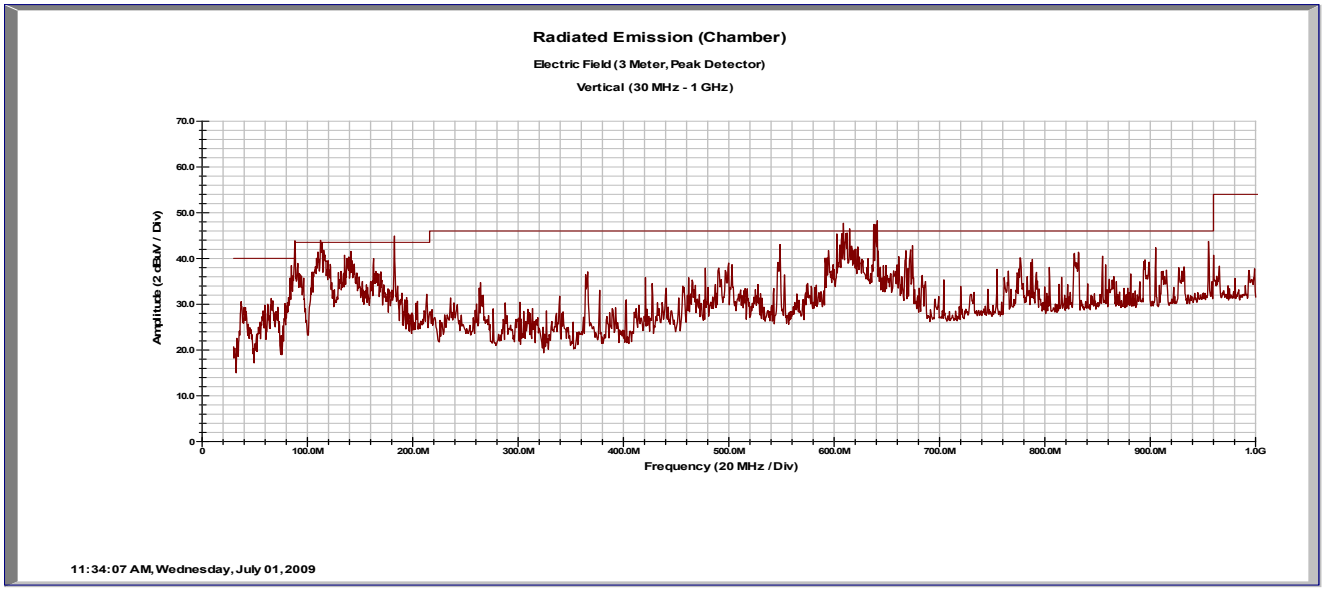
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBµV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBµV /m)	Spec Limit (dBµV /m)	Spec Margin (dB)
63.56	H	2.4	146	13.06	0.00	0.85	9.89	23.79	40.00	-16.21
182.20	H	1.2	99	22.85	0.00	1.45	9.66	33.96	43.50	-9.54
609.20	H	2.3	82	18.00	0.00	2.72	19.00	39.72	46.00	-6.28
639.96	H	1	79	19.05	0.00	2.79	20.10	41.94	46.00	-4.06
668.80	H	1	80	12.03	0.00	2.85	20.20	35.08	46.00	-10.92
827.76	H	1.2	5	15.34	0.00	3.17	21.86	40.37	46.00	-5.63

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

Radiated Emissions
Vertical



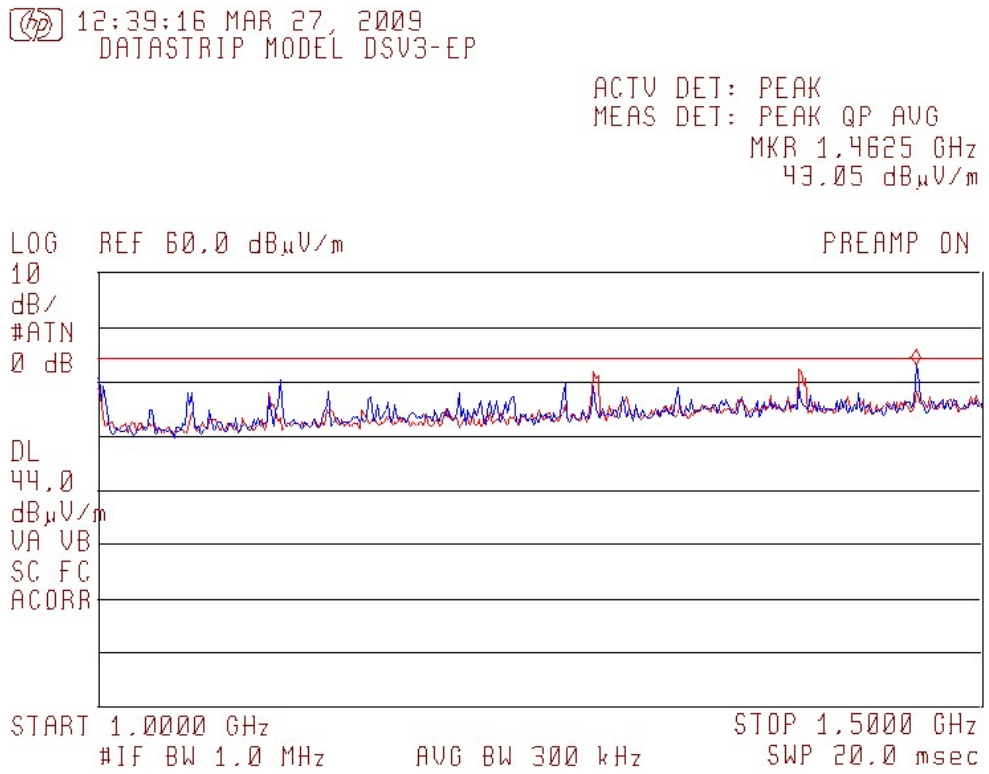
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBµV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBµV/m)	Spec Limit (dBµV/m)	Spec Margin (dB)
90.56	V	1	251	25.52	0.00	1.01	6.61	33.14	43.50	-10.36
113.44	V	1	156	26.85	0.00	1.14	7.53	35.52	43.50	-7.98
182.96	V	1	127	21.54	0.00	1.45	9.22	32.21	43.50	-11.29
609.72	V	1	336	11.85	0.00	2.72	19.59	34.16	46.00	-11.84
639.16	V	1	332	13.51	0.00	2.79	20.48	36.78	46.00	-9.22
955.32	V	1	216	17.01	0.00	3.49	23.31	43.81	46.00	-2.19

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

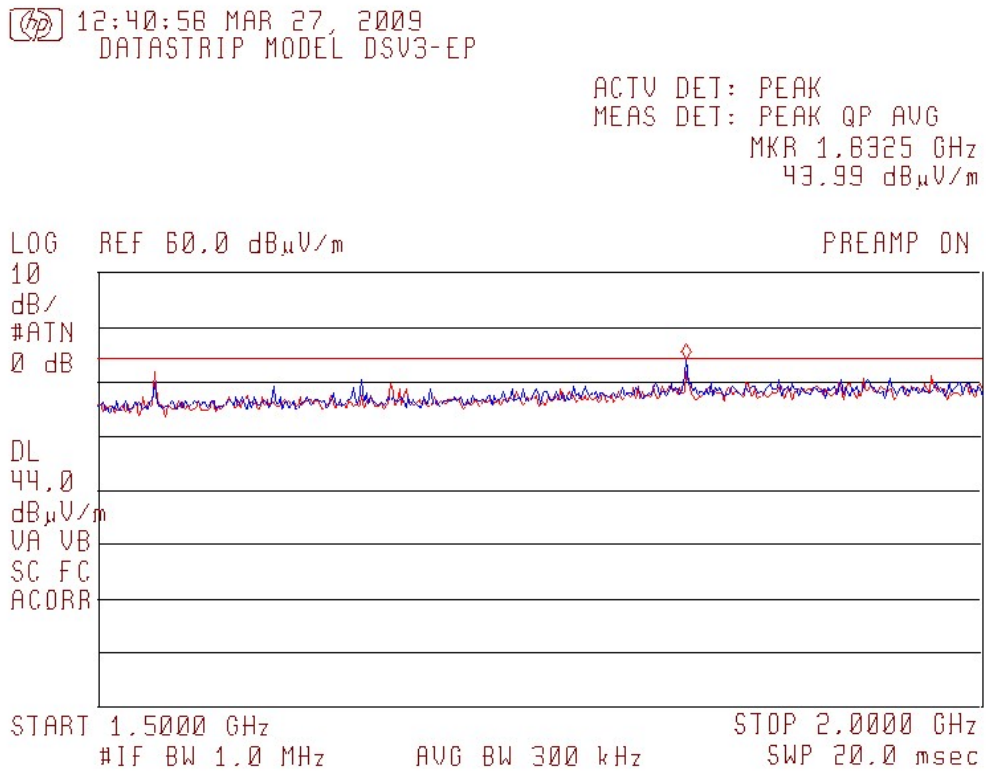
Notes:

NOTES:
Radiated Emissions Prescan at 1 GHz to 1.5 GHz
Vertical / Horizontal



		Measured Level										
Meas #	Freq (MHz)	Peak	Quasi-Peak	Average	Quasi-Peak Limit / Avg Limit	Quasi-Peak Δ / Avg Δ	Antenna + Cable Correction Factor (included in measured levels)	Result	Antenna Polarization	Angle (degrees)	Antenna Height (meters)	Comment
1	1106.0000	48.38	29.66	24.41	43.51	-13.85	27.10	Complied	Vertical	0	2.20	
2	1233.1250	40.11	30.29	26.73	43.51	-13.22	28.22	Complied	Vertical	0	2.00	
3	1491.5513	43.34	33.45	29.91	43.51	-10.06	30.78	Complied	Vertical	0	2.00	
4	1534.3338	43.47	33.99	30.36	43.51	-9.52	31.13	Complied	Vertical	0	1.80	
5	1833.0000	47.30	37.81	34.24	43.51	-5.70	33.14	Complied	Vertical	0	1.80	

NOTES:
Radiated Emissions Prescan at 1.5 GHz to 2.0 GHz
Vertical / Horizontal



4.6 Frequency Tolerance FCC Part 15.225(e) and RSS-210, A2.6

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20ºC to +50ºC 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 +20ºC. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.6.1 Test Over View

Results	**Complies** (as tested per this report)				**Date**	02 July 2009	
Standard	FCC Part 15.225(e) and RSS-210 A2.6						
Product Model	DSV3-SP			**Serial#**	DSV3SPAK083300020		
Configuration	See test plan for details						
Test Set-up	Tested in temperature chamber. See test plans for details						
EUT Powered By	120VAC / 60Hz	**Temp**	75º F	**Humidity**	39%	**Pressure**	1005mb
Perf. Criteria	0.01% of the operating frequency		**Perf. Verification**		Readings within Limit		
Mod to EUT	None		**Test Performed By**		Mark Ryan		

4.6.2 Test Procedure

The EUT was placed in a temperature chamber for the temperature variation test. Readings were made as per ANSI C63.4:2003 section H.5.2.

Voltage variations tests were performed by connecting the AC/DC adapter to a variable power supply. The EUT also used a chargeable battery, so the test set up included a freshly charged battery, per ANSI C63.4:2003, section H.5.3.

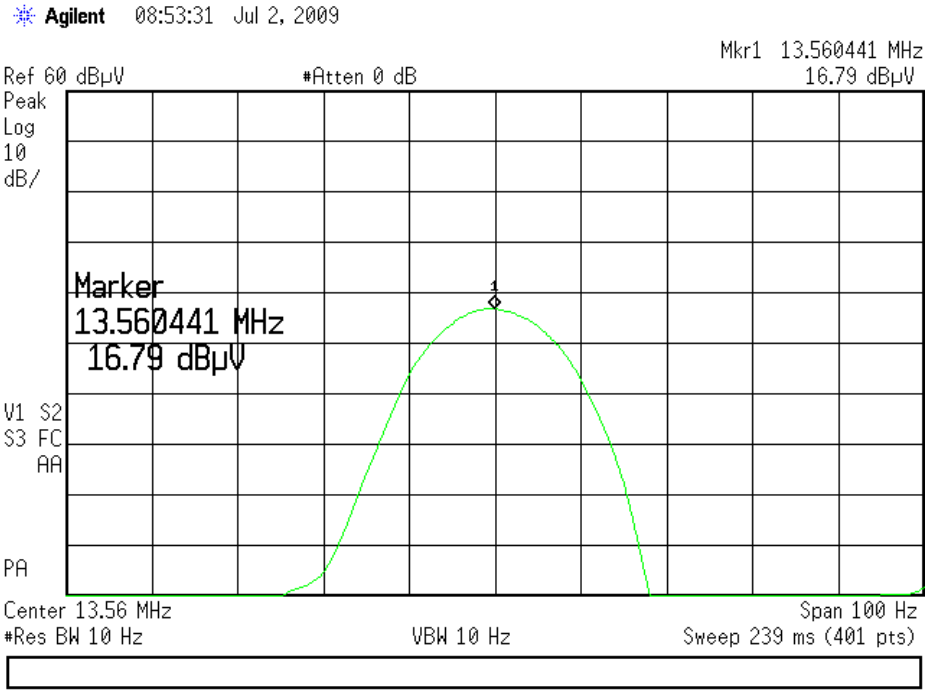
4.6.3 Deviations

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

4.6.4 Final Test

The Frequency Tolerance was within the limits (in compliance) as specified in FCC Part 15.225(e).

4.6.5 Final Data for Temperature Variations



Reference frequency at +20ºC, nominal 120 VAC/60Hz Voltage

0.01% of 13.56MHz = 1.356 KHz

Temp ºC	Measured frequency (in MHz)	Δ Reference (in Hz)	Permitted Band Edge in MHz (±0.01%)	Results
-20	13.560570	+129	13.5586 to 13.5614	Complied
20	13.560441	0		Complied
+50	13.560437	-4		Complied

Variations from low to high temperature, measurements made after a minimum 30 minutes soak at temperature.

4.6.6 Final Data for Voltage Variations

The Power module is rated from 100V to 240VAC, Reference Voltage is 120VAC

±0.01% of 13.56MHz = ±1.356 KHz

Voltage	Measured frequency (in MHz)	Δ Reference (in Hz)	Permitted Band Edge in MHz (±0.01%)	Results
85	13.560441	0	13.5586 to 13.5614	Complied
120	13.560441	0		Complied
276	13.560441	0		Complied

4.7 Powered Tags FCC Part 15.225(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.

4.7.1 Deviations

There were no deviations from the test methodology listed in the test plan for the Conducted Immunity test.

4.7.2 Final Test

The EUT does not use Powered Tags

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4.7.3 Final Data

The EUT uses passive tags; therefore this section is compliant without testing.

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	1 Waterview Drive
Address 2	Shelton, CT 06484
Contact Person	Martin Doyle
Telephone	Tel: (203) 225-9184 x4116
Fax	(203) 225-9260
e-mail	mdoyle@datastrip.net

5.2 Model(s) Name

DSV3-SP

5.3 Type of Product

Portable Biometric Identification Terminal

5.4 Equipment Under Test (EUT) Description

The DSV3® Series of products are portable, handheld computers specifically designed for security, law enforcement, border control and positive I.D. verification applications. They feature the ability to interface with Contact-less Smart Cards. An integrated fingerprint sensor enables biometric verification of identity.

5.5 Applicable Documents

Standards	Description
FCC Part 15, Subpart C	Radio Frequency Devices- Subpart C: Intentional Radiators
RSS-210 Issue 7	Low-Power Licence-exempt Radiocommunication Devices Category I Equipment
FCC Parts 15.205, 15.209, 15.215(b)	Radiated Emissions
FCC Part 15.207	Conducted Emissions
FCC Part 15.225 and RSS-210 A2.6	Operation within the band 13.110 – 14.01 MHz
FCC Part 15.225(a) and RSS-210 A2.6(a)	Field strength Emissions within 13.553 – 13.567 MHz
FCC Part 15.225(b) and RSS-210 A2.6(b) Basic test standard	Field strength Emissions within 13.410 – 13.553 MHz and 13.567 - 13.710
FCC Part 15.225(c) and RSS-210 A2.6(c) Basic test standard	Field strength Emissions within 13.110 – 13.410 MHz and 13.710 - 14.010
FCC Part 15.225(d) and RSS-210 A2.6(d) Basic test standard	Field strength outside the 13.110 - 14.010 MHz band
FCC Part 15.225(e) and RSS-210 A2.6 Basic test standard	Frequecny tolerance over -20ºC to +50ºC at normal power supply and for 85% and 115% of rated supply voltage.
FCC Part 15.225(f) and RSS-210 Part 2.5 Basic test standard	Frequency Powered Tags
FCC Part 15.215 (c) Basic test standard	20 dB Bandwidth
RSS-210 Basic test standard	99% Power Bandwidth

5.6 General Product Information

Size		**H**	18 cm	**W**	5.5 cm	**L**	15.5 cm
Weight		1 kg		**Fork-Lift Needed**		No	
Notes	Not including the external DC power module						

5.7 EUT Clock/Oscillator Frequencies

☒	**Less than 108MHz**	**FCC – scan up to 1GHz**
☐	**Less than 500MHz**	**FCC – scan up to 2GHz**
☐	**Less than 1000MHz**	**FCC – scan up to 5GHz**
☐	**Greater then 1000MHz**	**FCC – scan up to 5th Harmonic or 40GHz**