



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
fax: (480) 926-3598
<http://www.flomlabs.com>
info@flomlabs.com

Date: January 22, 2007

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Novatel Wireless Inc.
Equipment: E725
FCC ID: PKRNVWE725
FCC Rules: Radiofrequency Radiation Exposure Limits
47 CFR 1.1310
MPE - Mobiles X Fixed Based Station

Gentlemen:

On behalf of the Applicant, enclosed please find the Supplemental Test Data Report, the whole for Environmental Assessment (MPE) of the referenced equipment as shown.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

Hoosamuddin S. Bandukwala, Lab
Director

enclosure(s)
cc: Applicant
HSB/je



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
fax: (480) 926-3598
<http://www.flomlabs.com>
info@flomlabs.com

Environmental Assessment

for

Mobiles / Fixed Base Station

for

FCC ID: FCC ID: PKRNVWE725
Model: E725

to

Federal Communications Commission

47 CFR 1.1310 (MPE)
Radiofrequency Radiation Exposure Limits

Date Of Report: January 22, 2007

On the Behalf of the Applicant:

Novatel Wireless Inc.

At the Request of:

Novatel Wireless Inc.
9645 Scranton Rd, Suite 205
San Diego, CA 92121

Attention of:

John Jiang, Project Manager
888-888-9231; FAX:-2888
Email: jjiang@novatelwireless.com

Supervised By:

Hoosamuddin S. Bandukwala, Lab
Director

Table of Contents

Rule	Description	Page
	Test Report	1
	Identification of the Equipment Under Test	2
	Standard Test Conditions and Engineering Practices	3
1.1310	Environmental Assessment	4

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) **Test Report (Supplemental)**

b) Laboratory: Flom Test Labs Inc.
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d0710048

d) Client: Novatel Wireless Inc.
9645 Scranton Rd, Suite 205
San Diego, CA 92121

e) Identification: E725
FCC ID: PKRNVWE725
Description: Dell Latitude D830, Latitude D820 Precision M65 and Precision M4300

f) EUT Condition: Not required unless specified in individual tests.

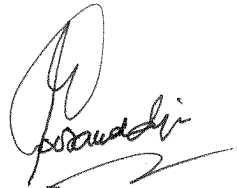
g) Report Date: January 22, 2007
EUT Received:

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:



Hoosamuddin S. Bandukwala, Lab
Director

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

Identification of the Equipment Under Test (EUT)

Name and Address of Applicant:

Novatel Wireless Inc.
9645 Scranton Rd, Suite 205
San Diego, CA 92121

Manufacturer:

Novatel Wireless Inc.
9645 Scranton Rd, Suite 205
San Diego, CA 92121

FCC ID: PKRNVWE725

Model Number: E725

Description: Dell Latitude D830, Latitude D820
Precision M65 and Precision M4300

Type of Emission: DSS and CDMA

Frequency Range, MHz: 824 MHz to 848 MHz / 1850 MHz to 1909 MHz
Co-located transmitter 2412 MHz to 2462 MHz / 5180 MHz to 5825 MHz

Power Rating, Watts:
☐ Switchable ☐ Variable ☒ N/A

Modulation:
☐ AMPS
☐ TDMA
☒ CDMA
☒ OTHER

Antenna:
☐ Helical
☐ Monopole
☐ Whip
☒ Other

Note: For RF Safety test antenna gain taken at the upper range of expected gain (i.e. 0 dBd) and RF Power set to highest nominal power across all channels.

Standard Test Conditions and Engineering Practices

A2LA

"A2LA has accredited Flom Test Labs, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Please refer to www.a2la.org for current scope of accreditation.

Certificate Number: **2152.01**

Name of Test:	Environmental Assessment
Specification:	FCC: 47 CFR 1.1310
Measurement Guide:	ANSI/IEEE C95.1 1992
Test Equipment:	Maximum Permissible Exposure (MPE) measurement system, consisting of: Holaday Isotropic Electric Field Probe Holaday HL-6005 Holaday Probeview LT V 1.0.3 monitoring software
Measurement Procedure:	1. The following measurements were performed with a Holaday HL-6005 probe using ANSI/IEEE C95.1 as a guide. 2. Prior to making any measurements, the measurements system was calibrated in accordance with the manufacturer's procedures. 3. The EUT's radiating element (antenna) was placed on a 1 m tall table for ease of testing. For equipment normally operated on a metal surface, a ground plane was used. The power density probe was 20 cm distance from the EUT while it was at 1m. 4. The remaining equipment necessary to operate the EUT was maintained at a distance from the measurement arrangement suitable to minimize interference with the measurements. 5. The minimum safe distance was calculated from the formula $\text{Power Density} = \text{EIRP} / 4\pi R^2$ (Peak Watts/m²). The calculation is shown with the measurement data. 6. With the EUT operating at maximum power, a search was initiated for worst case emissions with the probe raised and lowered over a range of 0.2 to 2 meters in height and over a horizontal plane of 0° to 360°. 7. Average values were calculated for the whole body (0.2-2.0m), lower body (0.2-0.8m) and upper body (1.0-2.0m).
Results:	Attached.

Test Setup: Maximum Permissible Exposure (MPE)



Name of Test: R.F. Radiation Exposure

FCC Rules: 1.1307, 1.1310, 1.1311, 2.1091

Description, EUT: See page 2 of Test Report

Limits: Uncontrolled Exposure	0.3-1.234 MHz:	Limit $[\text{mW}/\text{cm}^2] = 100$
47 CFR 1.1310	1.34-30 MHz:	Limit $[\text{mW}/\text{cm}^2] = (180/f^2)$
Table 1, (B)	30-300 MHz:	Limit $[\text{mW}/\text{cm}^2] = 0.2$
	300-1500 MHz	Limit $[\text{mW}/\text{cm}^2] = f/1500$
	1500-100,000 MHz:	Limit $[\text{mW}/\text{cm}^2] = 1.0$

CDMA 800 MHz Pre-Test Calculations:

Test Frequencies, MHz	824
Power, Conducted, W	= 1
Antenna Gain	= 3 dB
Antenna Model	Yageo internal for Dell Crocket laptop
Pre-test Calculations	$\text{Power}_{[\text{W EIRP}]} = P_{[\text{conducted}]} \times G_{[\text{antenna}]} = 2$ $\text{Limit}_{[\text{mW}/\text{cm}^2]} = f/1500$ $\text{Limit}_{[\text{W}/\text{m}^2]} = 10 \times \text{Limit}_{[\text{mW}/\text{cm}^2]} = 0.549$ $R_{[\text{m}]} = [P_{[\text{W EIRP}]} / (4\pi \times \text{Limit}_{[\text{W}/\text{m}^2]})]^{1/2} = 0.17$

CDMA 1900 MHz Pre-Test Calculations:

Test Frequencies, MHz	1851
Power, Conducted, W	= 1
Antenna Gain	= 3 dB
Antenna Model	Yageo internal for Dell laptop
Pre-test Calculations	$\text{Power}_{[\text{W EIRP}]} = P_{[\text{conducted}]} \times G_{[\text{antenna}]} = 2$ $\text{Limit}_{[\text{mW}/\text{cm}^2]} = 1.0$ $\text{Limit}_{[\text{W}/\text{m}^2]} = 10 \times \text{Limit}_{[\text{mW}/\text{cm}^2]} = 10.0$ $R_{[\text{m}]} = [P_{[\text{W EIRP}]} / (4\pi \times \text{Limit}_{[\text{W}/\text{m}^2]})]^{1/2} = 0.126$

WiFi Test Frequency	2412		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00203	0.00197	0.00198
1.8 m	0.00306	0.00305	0.00275
1.6 m	0.00414	0.00467	0.00396
1.4 m	0.00469	0.00460	0.00402
1.2 m	0.00156	0.00154	0.00177
1.0 m	0.00354	0.00357	0.00382
0.8 m	0.00353	0.00330	0.00293
0.6 m	0.00168	0.00168	0.00162
0.4 m	0.00130	0.00131	0.00122
0.2 m	0.00137	0.00140	0.00122

Power Density Calculations:

Lower Body Average	0.00197	0.00192	0.00175
Upper body Average	0.00317	0.00323	0.00305
Whole Body Average	0.00269	0.00271	0.00253

WiFi Test Frequency	2437		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00154	0.00222	0.00200
1.8 m	0.00233	0.00311	0.00272
1.6 m	0.00342	0.00468	0.00430
1.4 m	0.00356	0.00483	0.00388
1.2 m	0.00130	0.00196	0.00178
1.0 m	0.00243	0.00379	0.00375
0.8 m	0.00268	0.00331	0.00286
0.6 m	0.00156	0.00163	0.00159
0.4 m	0.00122	0.00130	0.00125
0.2 m	0.00125	0.00138	0.00121

Power Density Calculations:

Lower Body Average	0.00168	0.00191	0.00173
Upper body Average	0.00243	0.00343	0.00307
Whole Body Average	0.00213	0.00282	0.00253

WiFi Test Frequency	2462		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00189	0.00069	0.00179
1.8 m	0.00288	0.00098	0.00254
1.6 m	0.00420	0.00152	0.00380
1.4 m	0.00438	0.00150	0.00382
1.2 m	0.00140	0.00109	0.00182
1.0 m	0.00287	0.00172	0.00382
0.8 m	0.00299	0.00149	0.00285
0.6 m	0.00150	0.00132	0.00154
0.4 m	0.00122	0.00111	0.00121
0.2 m	0.00120	0.00097	0.00097

Power Density Calculations:

Lower Body Average	0.00173	0.00122	0.00164
Upper body Average	0.00294	0.00125	0.00293
Whole Body Average	0.00245	0.00124	0.00242

WiFi Test Frequency	2412		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00088	0.00115	0.00043
1.8 m	0.00031	0.00079	0.00044
1.6 m	0.00068	0.00112	0.00091
1.4 m	0.00478	0.00385	0.00266
1.2 m	0.00163	0.00141	0.00191
1.0 m	0.00615	0.00577	0.00481
0.8 m	0.00394	0.00418	0.00267
0.6 m	0.00168	0.00152	0.00145
0.4 m	0.00158	0.00142	0.00126
0.2 m	0.00117	0.00123	0.00107

Power Density Calculations:

Lower Body Average	0.00209	0.00209	0.00161
Upper body Average	0.00241	0.00235	0.00186
Whole Body Average	0.00228	0.00224	0.00176

WiFi Test Frequency	2437		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00095	0.00106	0.00052
1.8 m	0.00055	0.00107	0.00084
1.6 m	0.00101	0.00157	0.00125
1.4 m	0.00446	0.00393	0.00286
1.2 m	0.00299	0.00333	0.00310
1.0 m	0.00614	0.00672	0.00602
0.8 m	0.00294	0.00367	0.00269
0.6 m	0.00137	0.00126	0.00098
0.4 m	0.00141	0.00131	0.00100
0.2 m	0.00109	0.00113	0.00092

Power Density Calculations:

Lower Body Average	0.00170	0.00184	0.00140
Upper body Average	0.00268	0.00295	0.00243
Whole Body Average	0.00229	0.00251	0.00202

WiFi Test Frequency	2462		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00084	0.00102	0.00041
1.8 m	0.00031	0.00081	0.00043
1.6 m	0.00075	0.00114	0.00092
1.4 m	0.00425	0.00301	0.00261
1.2 m	0.00176	0.00156	0.00193
1.0 m	0.00605	0.00569	0.00494
0.8 m	0.00321	0.00377	0.00132
0.6 m	0.00157	0.00129	0.00099
0.4 m	0.00135	0.00130	0.00113
0.2 m	0.00094	0.00097	0.00093

Power Density Calculations:

Lower Body Average	0.00177	0.00183	0.00109
Upper body Average	0.00233	0.00221	0.00187
Whole Body Average	0.00210	0.00206	0.00156

WiFi Test Frequency	5180		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00720	0.00420	0.00375
1.8 m	0.01087	0.00695	0.00560
1.6 m	0.01298	0.01055	0.00840
1.4 m	0.01452	0.01169	0.00951
1.2 m	0.00229	0.00264	0.00255
1.0 m	0.00396	0.00327	0.00335
0.8 m	0.00653	0.00586	0.00500
0.6 m	0.00283	0.00273	0.00258
0.4 m	0.00207	0.00194	0.00188
0.2 m	0.00236	0.00221	0.00193

Power Density Calculations:

Lower Body Average	0.00345	0.00319	0.00285
Upper body Average	0.00864	0.00655	0.00553
Whole Body Average	0.00656	0.00520	0.00446

WiFi Test Frequency	5280		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00362	0.00342	0.00306
1.8 m	0.00622	0.00534	0.00456
1.6 m	0.01000	0.00562	0.00691
1.4 m	0.01161	0.01086	0.00796
1.2 m	0.00224	0.00265	0.00241
1.0 m	0.00301	0.00315	0.00304
0.8 m	0.00526	0.00512	0.00434
0.6 m	0.00259	0.00258	0.00242
0.4 m	0.00196	0.00189	0.00185
0.2 m	0.00219	0.00205	0.00190

Power Density Calculations:

Lower Body Average	0.00300	0.00291	0.00263
Upper body Average	0.00612	0.00517	0.00466
Whole Body Average	0.00487	0.00427	0.00385

WiFi Test Frequency	5825		
WLAN Test Frequency	824	836	848
Probe Height	Power Density mW/cm ²		
2.0 m	0.00367	0.00354	0.00269
1.8 m	0.00666	0.00584	0.00403
1.6 m	0.01036	0.00960	0.00633
1.4 m	0.01266	0.01140	0.00792
1.2 m	0.00233	0.00277	0.00233
1.0 m	0.00317	0.00320	0.00282
0.8 m	0.00531	0.00509	0.00407
0.6 m	0.00265	0.00264	0.00246
0.4 m	0.00198	0.00191	0.00183
0.2 m	0.00216	0.00209	0.00189

Power Density Calculations:

Lower Body Average	0.00303	0.00293	0.00256
Upper body Average	0.00648	0.00606	0.00435
Whole Body Average	0.00510	0.00481	0.00364

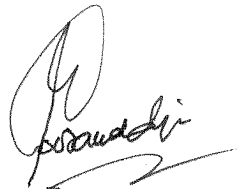
WiFi Test Frequency	5180		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00092	0.00136	0.00065
1.8 m	0.00069	0.00119	0.00074
1.6 m	0.00106	0.00126	0.00097
1.4 m	0.00402	0.00420	0.00294
1.2 m	0.00114	0.00132	0.00172
1.0 m	0.00354	0.00567	0.00484
0.8 m	0.00317	0.00401	0.00270
0.6 m	0.00216	0.00134	0.00136
0.4 m	0.00193	0.00125	0.00111
0.2 m	0.00166	0.00112	0.00088

Power Density Calculations:

Lower Body Average	0.00223	0.00193	0.00151
Upper body Average	0.00190	0.00250	0.00198
Whole Body Average	0.00203	0.00227	0.00179

WiFi Test Frequency	5280		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00087	0.00112	0.00051
1.8 m	0.00035	0.00087	0.00049
1.6 m	0.00069	0.00107	0.00088
1.4 m	0.00433	0.00427	0.00280
1.2 m	0.00156	0.00141	0.00175
1.0 m	0.00529	0.00525	0.00473
0.8 m	0.00315	0.00368	0.00261
0.6 m	0.00149	0.00140	0.00140
0.4 m	0.00129	0.00129	0.00115
0.2 m	0.00100	0.00117	0.00095
Power Density Calculations:			
Lower Body Average	0.00173	0.00189	0.00153
Upper body Average	0.00218	0.00233	0.00186
Whole Body Average	0.00200	0.00215	0.00173

WiFi Test Frequency	5825		
WLAN Test Frequency	1850	1880	1909
Probe Height	Power Density mW/cm ²		
2.0 m	0.00081	0.00107	0.00045
1.8 m	0.00042	0.00097	0.00053
1.6 m	0.00089	0.00126	0.00106
1.4 m	0.00474	0.00436	0.00310
1.2 m	0.00162	0.00141	0.00175
1.0 m	0.00535	0.00543	0.00455
0.8 m	0.00298	0.00363	0.00258
0.6 m	0.00147	0.00143	0.00138
0.4 m	0.00135	0.00128	0.00114
0.2 m	0.00101	0.00112	0.00094
Power Density Calculations:			
Lower Body Average	0.00170	0.00187	0.00151
Upper body Average	0.00231	0.00242	0.00191
Whole Body Average	0.00206	0.00220	0.00175



Supervised By:

Hoosamuddin S. Bandukwala, Lab
Director

(The following will be placed in the Instruction Manual)

Mandatory Safety Instructions to Installers & Users

Use only manufacturer or dealer supplied antenna.

Antenna Minimum Safe Distance: 0.17m.

Antenna Gain: 3 dBi .

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

Antenna Mounting: The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the above indicated minimum safe distance to the antenna i.e. .

To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.

Base Station Installation: The antenna should be fixed- mounted on an outdoor permanent structure. RF Exposure compliance must be addressed at the time of installation.

Antenna Substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer. You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.

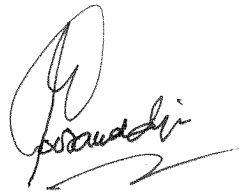
Warning: Maintain a separation distance from the antenna to a person(s) of at least .

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna.

**Testimonial
and
Statement of Certification**

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.



Certifying Engineer:

Hoosamuddin S. Bandukwala, Lab
Director