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WILSON ELECTRONICS, INC.
FCC ID: PWO8140SD

June 22, 2005

FCC RF EXPOSURE EXHIBIT

**PART 1.1310 ENVIRONMENTAL ASSESSMENT
FOR A MOBILE TRANSMITTER**

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1. TEST REPORT INFORMATION

- a) Laboratory:
Timco Engineering, Inc
849 N.W. State Road 45
Newberry, Florida 32669

- b) Client:
Wilson Electronics Co.
3301 E Deseret Dr.
St. George UT 84790

- c) Identification: FCC ID: PWO8140SD
- d) Description: 806 to 825 MHz iDEN amplifier
- e) EUT Condition: Not required unless specified in individual tests.
- f) Report Date: June 20, 2005
- g) EUT Received: May 28, 2005
- h) Sampling method: No sampling procedure used.
- i) Uncertainty: In accordance with Timco's internal quality manual.
- j) Test results: The results presented in this report relate only to the item tested.
- k) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

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2. IDENTIFICATION OF THE EQUIPMENT UNDER TEST

NAME AND ADDRESS OF APPLICANT:

Wilson Electronics Company
3301 E Deseret Dr.
St George UT 84790

MANUFACTURER: Applicant

FCC ID: PWO8140SD

MODEL NO: 814004

DESCRIPTION: iDEN amplifier

| TYPE OF EMISSION: D7W, D7D

| FREQUENCY RANGE, MHz: 806 to 825 MHz

POWER RATING, Watts: Maximum Conducted 4 Watts

Switchable or Variable N/A

| MODULATION: D7W, D7D

ANTENNA: 1:

With 11 feet of RG 174A/U.
5.0 dBi gain. Magnet mount style

ANTENNA 2:

With 14 ft of RG-58A/U
5.8 dBi gain. NMO thru hole style mount.



3. STANDARD TEST CONDITIONS

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10 to 40 degrees C (50 to 104 degrees F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Temperature: 89.5°F

Humidity: 51%

4. PART 1.1310 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:

Amplifier Research Model FM-5004

Amplifier Research, Isotropic Field Probe Model FP-5000
10 kHz – 1000 MHz

HP peak power meter 8900C with associated sensor.



Measurement Procedure:

1. The following measurements were performed with an Amplifier Research Field 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 ground plane . The approximate height from ground level to the ground plane is 80 cm. The vertical whip antenna was mounted in a typical operational manner, namely the center.
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 Power Density = EIRP /4πR² (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 the ground plane to 2 meters in height and over a horizontal plane of 0 to 360 degrees. Worst case emissions were found to be at point perpendicular from the antenna base to the center of the ground plane. Readings were equivalent for both left and right sides.
7. HP 8900C Wattmeter/Antenna measurements: 4 Watts conducted into a 50 Ohm load.

Discussion:

The distance 60 cm was picked as a starting point based on the far field equation .

FMhz := 806	D := .335	
$\lambda := \frac{300}{\text{FMhz}}$	$r1 := \frac{(2D^2)}{\lambda}$	Far Field Equation
	r1 = 0.603	meters

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Results follow:

FCC Rules: 1.1307, 1.1310, 2.1091
Description, EUT: Wilson Model 814004Amplifier



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Test Frequency, MHz = 806 MHz.

Antenna 1 Model: 304002

Antenna Gain = 5 dBi with 11 feet of RG-174a/U coax

Antenna 2 Model: 304003

Antenna Gain = 5.8 dBi with 14 feet of RG-58a/U coax

Rated Probe: Amplifier Research FM-5004 Probe

LIMITS: Uncontrolled Exposure 47 CFR 1.1310

0.3-1.234 MHz: Limit [mW/cm²] = 100

1.34-30 MHz: Limit [mW/cm²] = (180/f²)

30-300 MHz: Limit [mW/cm²] = 0.2

300-1500 MHz Limit [mW/cm²] = f/1500

1500-100,000 MHz: Limit [mW/cm²] = 1.0

Power, measured is for a 100% duty cycle. Duty cycle could be compensated to 67.5% as iDEN waveform is only intended modulation .

Limit: Uncontrolled Exposure = 0.53 mW/cm² @ 806 MHz

Tested Distance: 60 cm from antenna base

Probe Height: in cm above average ground terrain..

Results: At tested distance of 60 cm and 4 Watts conducted output power

Probe Height(cm)		Pd mW/cm ² (100 % DCCF)	Pd*.675* mW/cm ² (67.5% DCCF)
Antenna 1			
80		.34	.23
100		.15	.11
Antenna 2			
80		.21	.14
100		.10	.07

* 67.5% Operational Duty Cycle Correction Factor. Based on iDEN modulation.

Conclusion: The installation of a 5.8 dBi vertically mounted antenna at a separation distance of less than 60cm meets the maximum permissible exposure limits as set forth in IEEE C95.1 and FCC OET Bulletin 65.

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TEST ENGINEER: Mario de Aranzeta and Joe Scoglio

SUPERVISED BY: Bruno Clavier



5. STATEMENT OF COMPLIANCE

This is to declare:

1. THAT the report was prepared either by, and/or under the direct supervision of, the undersigned staff.
2. THAT the data was obtained on representative units, randomly selected.
4. THAT, to the best of our knowledge and belief, the facts set forth in this report and accompanying technical data are true and correct.

TEST ENGINEER: Mario de Aranzeta and Joe Scoglio

SUPERVISING ENGINEER: Bruno Clavier

REPORT NAME: U:\W\WILSON_PWO\840AUT5\Wilson MPE measured revised 5_06_27.doc

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