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## RF Radiation Safety Report

<b>APPLICANT</b>	WILSON ELECTRONICS, INC.
	3301 E. DESERET DRIVE
	ST. GEORGE UTAH 84790 USA
<b>FCC ID</b>	PWO276215
<b>MODEL NUMBER</b>	276215
<b>PRODUCT DESCRIPTION</b>	BOOSTER RADIATION SAFETY
<b>DATE SAMPLE RECEIVED</b>	12/7/2011
<b>DATE TESTED</b>	01/9/2012
<b>TESTED BY</b>	Sushant Kadimdivan
<b>APPROVED BY</b>	Mario de Aranzeta
<b>TIMCO REPORT NO.</b>	W\WILSON_PWO\2881UT11\2881UT11TestReport.doc
<b>TOTAL PAGES</b>	9
<b>TEST RESULTS</b>	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01



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**GENERAL REMARKS**

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

**Summary**

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

**Attestations**

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.



Testing Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.  
849 NW State Road 45  
Newberry, Fl 32669

**Authorized Signatory Name:**



Mario de Aranzeta C.E.T.  
Compliance Engineer/ Lab. Supervisor

**Date:** 01/12/2012

**Tested by:** Sushant Kadimdivan



**Signature:**

**GENERAL INFORMATION**

**DUT Specification**

<b>DUT Description</b>	BOOSTER RADIATION SAFETY
<b>FCC ID</b>	PWO276215
<b>Model Number</b>	276215
<b>Operating Frequency</b>	Uplink 824 – 849 MHz Downlink 869 – 894 MHz Uplink 1850 – 1910 MHz Downlink 1930 – 1990 MHz
<b>Type of Emission</b>	F9W (CDMA & WCDMA), GXW (GSM), F1D (AMPS), G7W (EDGE)
<b>Modulation</b>	CDMA, WCDMA, GSM, EDGE, FM, HSPA, EVDO, LTE
<b>DUT Power Source</b>	<input type="checkbox"/> 110–120Vac/50– 60Hz
	<input checked="" type="checkbox"/> DC Power 6 V
	<input type="checkbox"/> Battery Operated Exclusively
<b>Test Item</b>	<input type="checkbox"/> Prototype
	<input type="checkbox"/> Pre-Production
	<input checked="" type="checkbox"/> Production
<b>Type of Equipment</b>	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
<b>Test Conditions</b>	The temperature was 26°C with a relative humidity of 50%.
<b>Modification to the DUT</b>	None
<b>Test Exercise</b>	The DUT was fed a CW signal from a signal generator
<b>Applicable Standards</b>	FCC OET BULLETIN 65
<b>Test Facility</b>	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA.

**Supporting Peripheral Equipment:**

Antenna, Wilson Electronics - Model # 301135



## EQUIPMENT LIST

<b>Device</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Cal/Char Date</b>	<b>Due Date</b>
Signal Generator	HP	8648C	3847A04696	6/12/2011	6/12/2013
Amplifier	Mini Circuits	ZHL-42	15542	-	-
Power Meter/Sensor	Boonton	4531/51072A	11793/34647	11/12/2010	11/12/2012
Field Monitor	Amplifier Research	FM5004	22288	-	-
Field Probe	Amplifier Research	FP6001	302504	04/11/11	04/11/13

**TEST PROCEDURE**

The device under test consists of the Booster (model#276215) coupled with the antenna (model#301135), both manufactured by Wilson Electronics.

The CW input signal to the booster was adjusted until the maximum output power of the booster was obtained. The frequency was set to the lowest frequency in the band. The lowest frequency in the band represents the least attenuation between the antenna and a person. The antenna was connected directly to the Booster and positioned at a height of 1.5 m above the ground plane. The location for the antenna was chosen in such a way that the reflection from any nearby walls and objects is minimized.

The field strength was measured using an isotropic field probe. The field probe was positioned in front of the antenna and the height adjusted to maximize the field strength. The distance between the antenna and the field probe was varied in steps (from 6 cm to 30 cm) and the field strength recorded at each point.

**REQUIREMENTS**

According to the FCC OET BULLETIN 65 the maximum permissible exposure is (f/1500)mW/cm<sup>2</sup> at 869 MHz for uncontrolled environment. The limit is 1 mW/cm<sup>2</sup> at 1930 MHz for uncontrolled environment.

**TEST DATA**

1) Frequency 1: 1930 MHz

Antenna = model # 301135, Numeric Gain @ 1930 MHz = 11.48

Booster = 276215

Input Signal type to Booster = CW

Antenna Input Power = 30.5 dBm

Height of Antenna: 1.55 m

FCC Limit = 1 mW/cm<sup>2</sup> = 61.4 V/m

Minimum Safe Distance, experimentally measured (@30.5 dBm, 1930 MHz) = 16.5 cm

Minimum Safe Distance, estimated from FCC OET Bulletin 65 = 32 cm

Frequency = 1930 MHz		
Booster O/P power = 30.5 dBm		
Distance (cm)	Field Strength (V/m)	Plane Wave Equivalent Power Density (mW/cm <sup>2</sup> )
6	113.0	3.39
7	100.0	2.65
8	92.7	2.27
10	86.0	1.96
14	65.8	1.15
16.5	61.1	0.99
20	53.0	0.74
30	42.7	0.48

Measured Field Strength at 1930 MHz

- 2) Frequency 1: 869 MHz  
 Antenna = model # 301135, Numeric Gain @ 869 MHz = 2.75  
 Booster = 276215  
 Input Signal type to Booster = CW  
 Antenna Input Power = 30.2 dBm  
 Height of Antenna: 1.55 m  
 FCC Limit = 0.579 mW/cm<sup>2</sup> = 46.7 V/m  
 Minimum Safe Distance, experimentally measured (@30.2 dBm, 869 MHz) = 14 cm  
 Minimum Safe Distance, estimated from FCC OET Bulletin 65 = 19.9 cm

Frequency = 869 MHz		
Booster O/P power = 30.2 dBm		
Distance (cm)	Field Strength (V/m)	Plane Wave Equivalent Power Density (mW/cm <sup>2</sup> )
6	75.2	1.50
7	67.0	1.19
8	61.5	1.00
10	55.7	0.82
14	46.0	0.56
16	41.9	0.46
20	36.0	0.34
30	28.5	0.21

Measured Field Strength at 869 MHz

## CONCLUSION

At a distance equal to or greater than 16.5 cm, the measured power density was less than the maximum permissible power density for human exposure set by the FCC (worst case between the bands).

**TEST SETUP PICTURES**





**TEST SAMPLE PICTURES**

