



**MET Laboratories, Inc.** *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313  
33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372  
3162 BELICK STREET • SANTA CLARA, CA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372  
13301 MCCALLEN PASS • AUSTIN, TEXAS 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

May 14, 2014

Digital Receiver Technology, Inc.  
12409 Milestone Center Dr.  
Germantown, MD 20876

Dear Steve Hudson,

Enclosed is the EMC Wireless test report for MPE measurements of the Digital Receiver Technology, Inc., DRT9957B as evaluated to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 1, Subpart I, Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 2, Subpart J, and RSS-102, Issue 4, March 2010.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,  
MET LABORATORIES, INC.

Jennifer Warnell  
Documentation Department

Reference: (\Digital Receiver Technology, Inc.\EMC39286A-MPE Rev. 1)

Certificates and reports shall not be reproduced except in full, without the written permission of MET Laboratories, Inc.

## **RF Maximum Permissible Exposure (MPE) Report For Controlled and Uncontrolled Environments**

for the

**Digital Receiver Technology, Inc.  
DRT9957B**

**Tested under**  
the FCC Certification Rules  
contained in  
Title 47 of the CFR, Part 1 Subpart I & Part 2 Subpart J  
&  
RSS-102, Issue 4, March 2010

**MET Report: EMC39286A-MPE Rev. 1**

May 14, 2014

**Prepared For:**

**Digital Receiver Technology, Inc.  
12409 Milestone Center Dr.  
Germantown, MD 20876**

**Prepared By:**  
**MET Laboratories, Inc.**  
914 W. Patapsco Ave.  
Baltimore, MD 21230

## RF Maximum Permissible Exposure (MPE) Report For Controlled and Uncontrolled Environments

for the

**Digital Receiver Technology, Inc.**  
**DRT9957B**

**Tested under**  
the FCC Certification Rules  
contained in  
Title 47 of the CFR, Part 1 Subpart I & Part 2 Subpart J  
&  
RSS-102, Issue 4, March 2010



Len Knight, Project Engineer  
Electromagnetic Compatibility Lab



Jennifer Warnell  
Documentation Department

**Engineering Statement:** The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Parts 1 and 2, and Industry Canada standards RSS-102, Issue 4, March 2010 under normal use and maintenance.



Asad Bajwa,  
Director, Electromagnetic Compatibility Lab



## Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	March 20, 2014	Initial Issue.
1	May 14, 2014	Revised to reflect engineer corrections.

## Table of Contents

<b>I.</b>	<b>Executive Summary .....</b>	<b>1</b>
	A. Purpose of Test .....	2
	B. MPE Measurements and Applicable Regulations .....	2
<b>II.</b>	<b>Equipment Configuration .....</b>	<b>3</b>
	A. Overview .....	4
	B. Test Site .....	4
	C. Description of Test Sample .....	5
	D. Equipment Configuration .....	6
	E. Support Equipment .....	6
	F. Mode of Operation .....	6
	G. Modifications .....	6
	a) Modifications to EUT .....	6
	b) Modifications to Test Standard .....	6
	H. Disposition of EUT .....	6
<b>III.</b>	<b>MPE Limits .....</b>	<b>7</b>
	A. Limits for Maximum Permissible Exposure (MPE) .....	8
	B. Calculating MPE Distance from Antenna .....	9
<b>IV.</b>	<b>Test Equipment .....</b>	<b>30</b>

## List of Tables

Table 1. EUT Summary Table .....	4
Table 2. Equipment Configuration .....	6
Table 3. Support Equipment .....	6
Table 4. Test Equipment List .....	31

## List of Figures

Figure 1. Block Diagram of Test Configuration .....	5
---	---

## List of Photographs

Photograph 1. Test Setup .....	29
--------------------------------	----

## List of Terms and Abbreviations

<b>AC</b>	<b>Alternating Current</b>
<b>ACF</b>	<b>Antenna Correction Factor</b>
<b>Cal</b>	<b>Calibration</b>
<b><i>d</i></b>	<b>Measurement Distance</b>
<b>dB</b>	<b>Decibels</b>
<b>dB<sub>μ</sub>A</b>	<b>Decibels above one microamp</b>
<b>dB<sub>μ</sub>V</b>	<b>Decibels above one microvolt</b>
<b>dB<sub>μ</sub>A/m</b>	<b>Decibels above one microamp per meter</b>
<b>dB<sub>μ</sub>V/m</b>	<b>Decibels above one microvolt per meter</b>
<b>DC</b>	<b>Direct Current</b>
<b>E</b>	<b>Electric Field</b>
<b>DSL</b>	<b>Digital Subscriber Line</b>
<b>ESD</b>	<b>Electrostatic Discharge</b>
<b>EUT</b>	<b>Equipment Under Test</b>
<b><i>f</i></b>	<b>Frequency</b>
<b>FCC</b>	<b>Federal Communications Commission</b>
<b>GRP</b>	<b>Ground Reference Plane</b>
<b>H</b>	<b>Magnetic Field</b>
<b>HCP</b>	<b>Horizontal Coupling Plane</b>
<b>Hz</b>	<b>Hertz</b>
<b>IEC</b>	<b>International Electrotechnical Commission</b>
<b>kHz</b>	<b>kilohertz</b>
<b>kPa</b>	<b>kilopascal</b>
<b>kV</b>	<b>kilovolt</b>
<b>LISN</b>	<b>Line Impedance Stabilization Network</b>
<b>MHz</b>	<b>Megahertz</b>
<b>μH</b>	<b>microhenry</b>
<b>μF</b>	<b>microfarad</b>
<b>μs</b>	<b>microseconds</b>
<b>NEBS</b>	<b>Network Equipment-Building System</b>
<b>PRF</b>	<b>Pulse Repetition Frequency</b>
<b>RF</b>	<b>Radio Frequency</b>
<b>RMS</b>	<b>Root-Mean-Square</b>
<b>TWT</b>	<b>Traveling Wave Tube</b>
<b>V/m</b>	<b>Volts per meter</b>
<b>VCP</b>	<b>Vertical Coupling Plane</b>

# **I. Executive Summary**

## A. Purpose of Test

An MPE evaluation was performed to determine compliance of the Digital Receiver Technology, Inc. DRT9957B, with the requirements of Part 1 and 2. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the DRT9957B. Digital Receiver Technology, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the DRT9957B, has been **permanently** discontinued.

## B. MPE Measurements and Applicable Regulations

This test report presents the results of Maximum Permissible Exposure (MPE)<sup>1</sup> measurements performed on the Digital Receiver Technology, Inc. DRT9957B, operating in the frequency ranges 851 - 869 MHz, 869 - 894 MHz, and 1930 – 1990 MHz. The tests were performed in accordance with TCB training material and the following parts of the FCC Rules and Regulations and Industry Canada Radio Standard Specification:

- IEEE Std. C95.1: 2005: “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz”
- IEEE Std. C95.3: 2002: “IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields with Respect to Human Exposure to Such Fields, 100 kHz – 300 GHz”
- FCC OET Bulletin 65, Edition 97-01: “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”
- FCC Supplement C to OET Bulletin 65, Edition 01-01: “Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emission.”
- Subpart I, Part 1 of 47 CFR FCC Rules and Regulations, Edition 10-1-11: “Procedures Implementing the National Environmental Policy Act of 1969.” Specifically, Paragraph 1.1310: “Radiofrequency Radiation Exposure Limits”
- Subpart J, Part 2 of 47 CFR FCC Rules and Regulations, Edition 10-1-11: “Equipment Authorization Procedures.” Specifically, Paragraph 2.1091: “Radiofrequency Radiation Exposure Evaluation: Mobile Devices”
- FCC KDB 447498 D01 Mobile Portable RF Exposure v04: “RF Exposure and Equipment Authorization Policies”
- RSS-102, Issue 4, March 2010: “Spectrum Management and Telecommunications Radio Standards Specification. Radiofrequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands.)”

---

<sup>1</sup> By definition, maximum permissible exposure (MPE) is rms or peak electric (or magnetic) field strength, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with an acceptable safety factor.



## II. Equipment Configuration

## A. Overview

MET Laboratories, Inc. was contracted by Digital Receiver Technology, Inc. to perform testing on the DRT9957B, under Digital Receiver Technology, Inc.'s purchase order number 053066.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Digital Receiver Technology, Inc., DRT9957B.

The results obtained relate only to the item(s) tested.

<b>Model(s) Tested:</b>	DRT9957B				
<b>EUT Specifications:</b>	Primary Power: 120 VAC, 60 Hz				
	FCC ID: XLM9957B1				
	EUT Frequency Ranges:	851 – 869 MHz	869 – 894 MHz	1930 – 1990 MHz	2110 – 2155 MHz
	Type of Modulations:	TDMA	GSM / CDMA	GSM / CDMA / WCDMA	CDMA / WCDMA
	Applicable FCC Rule Part:	90	22	24	27
<b>Analysis:</b>	The results obtained relate only to the item(s) tested.				
<b>Environmental Test Conditions:</b>	Temperature: 15-35° C				
	Relative Humidity: 30-60%				
	Barometric Pressure: 860-1060 mbar				
<b>Evaluated by:</b>	Len Knight				
<b>Report Date(s):</b>	May 14, 2014				

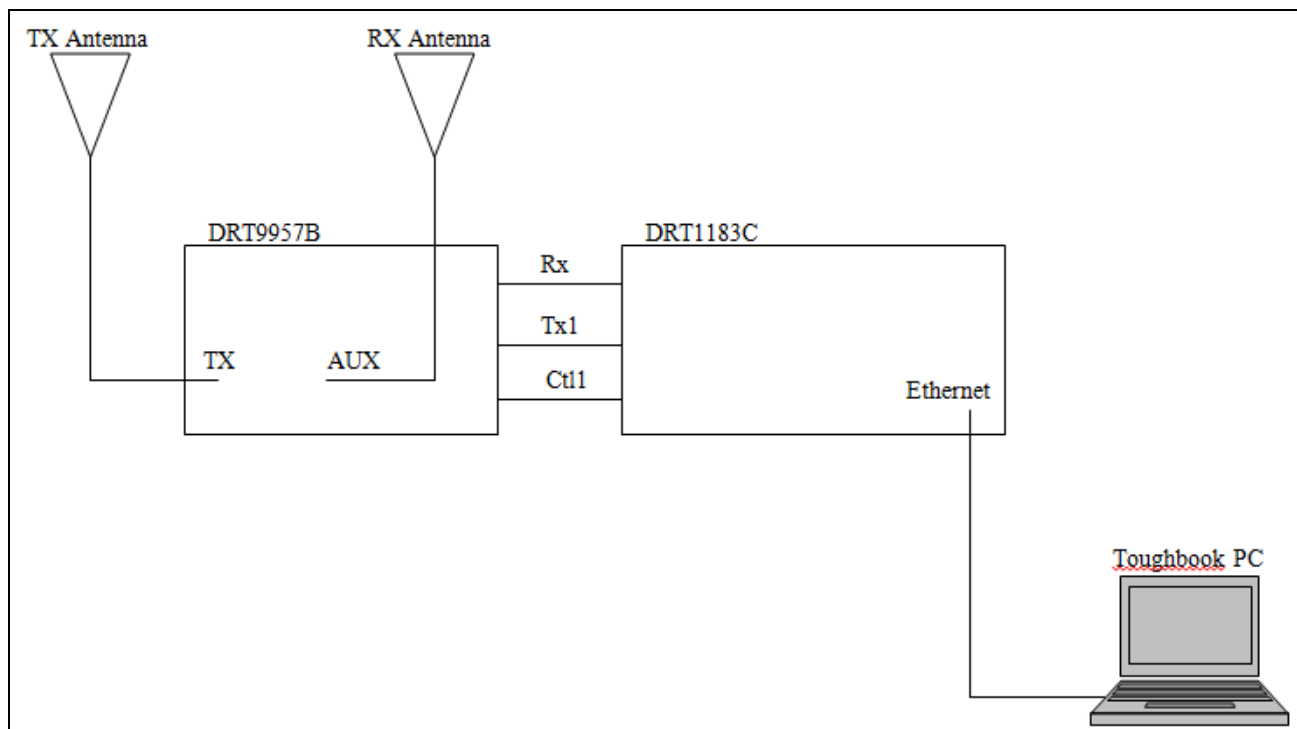
Table 1. EUT Summary Table

## B. Test Site

All testing was performed at MET Laboratories, Inc., 914 W. Patapsco Ave., Baltimore, MD 21230. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

## C. Description of Test Sample

The DRT9957B is an RF power amplifier used with DRT base stations operating in the cellular, PCS, AWS, and TDMA 850MHz bands.



**Figure 1. Block Diagram of Test Configuration**

#### **D. Equipment Configuration**

<b>Name / Description</b>	<b>Model Number</b>
TacTRAM	DRT9957B

**Table 2. Equipment Configuration**

#### **E. Support Equipment**

<b>Name / Description</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>
Base Station	DRT	DRT1183C	--
Toughbook PC	Panasonic	CF-19	CF-19KDRAX6M

**Table 3. Support Equipment**

#### **F. Mode of Operation**

EUT operates as an RF power amplifier for DRT mobile base stations in GSM, CDMA, and WCDMA in the Cellular, PCS, and AWS bands, and TDMA in the 850 MHz band.

#### **G. Modifications**

- a) **Modifications to EUT**  
No modifications were made to the EUT.
- b) **Modifications to Test Standard**  
No modifications were made to the test standard.

#### **H. Disposition of EUT**

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Digital Receiver Technology, Inc. upon completion of testing.

### **III.MPE Limits**

## A. Limits for Maximum Permissible Exposure (MPE)

**Requirements:** FCC Guidelines for evaluating exposure to RF Emissions, from the FCC OET Bulletin 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30
f = frequency in MHz		*Plane-wave equivalent power density		

**Procedures:** Prior to radiated testing, the radio was connected to a power meter in order to see if any channel was significantly stronger than the rest for each band. For the purposes of testing, the channel with the highest power from each band was used.

## B. Calculating MPE Distance from Antenna

### Part 22, Low Channel, GSM

MPE Limit Calculation: EUT's operating frequencies @ 869.2 MHz; highest conducted power = 43.97 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 0.57947 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (0.57947 mW/cm<sup>2</sup>)  
P = Power Input to antenna (24945.9 mW)  
G = Antenna Gain (2 numeric)

$$R = (24945.9 * 2 / 4\pi * 0.57947)^{1/2} = 82.8 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 869.2 MHz; highest conducted power = 43.97 dBm therefore, **Occupational/Controlled Exposure: 2.8973 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (2.8973 mW/cm<sup>2</sup>)  
P = Power Input to antenna (24945.9 mW)  
G = Antenna Gain (2 numeric)

$$R = (24945.9 * 2 / 4\pi * 2.8973)^{1/2} = 37 \text{ cm}$$

### **Part 22, High Channel, CDMA**

MPE Limit Calculation: EUT's operating frequencies @ 893.3 MHz; highest conducted power = 43.73 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 0.5955 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (0.5955 mW/cm<sup>2</sup>)  
P = Power Input to antenna (23604.8 mW)  
G = Antenna Gain (2 numeric)

$$R = (23604.8 * 2 / 4\pi * 0.5955)^{1/2} = 79.4 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 893.3 MHz; highest conducted power = 43.73 dBm therefore, **Occupational/Controlled Exposure: 2.978 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (2.978 mW/cm<sup>2</sup>)  
P = Power Input to antenna (23604.8 mW)  
G = Antenna Gain (2 numeric)

$$R = (23604.8 * 2 / 4\pi * 2.978)^{1/2} = 35.5 \text{ cm}$$



### Part 22, Mid Channel, WCDMA

MPE Limit Calculation: EUT's operating frequencies @ 881.4MHz; highest conducted power = 43.78 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 0.5876 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (0.5876 mW/cm<sup>2</sup>)  
P = Power Input to antenna (23878.1 mW)  
G = Antenna Gain (2 numeric)

$$R = (23878.1 * 2 / 4\pi * 0.5944)^{1/2} = 79.9 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 881.4 MHz; highest conducted power = 43.78 dBm therefore, **Occupational/Controlled Exposure: 2.938 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (2.938 mW/cm<sup>2</sup>)  
P = Power Input to antenna (23878.1 mW)  
G = Antenna Gain (2 numeric)

$$R = (23878.1 * 2 / 4\pi * 2.972)^{1/2} = 35.7 \text{ cm}$$

### **Part 24, High Channel, GSM**

MPE Limit Calculation: EUT's operating frequencies @ 1930.2 MHz; highest conducted power = 43.97 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 1.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (1.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (24945.9 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (24945.9 * 2.51 / 4\pi * 1.0)^{1/2} = 70.6 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 1930.2 MHz; highest conducted power = 43.97 dBm therefore, **Occupational/Controlled Exposure: 5.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (5.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (24945.9 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (24945.9 * 2.51 / 4\pi * 5)^{1/2} = 31.6 \text{ cm}$$

### **Part 24, Mid Channel, CDMA**

MPE Limit Calculation: EUT's operating frequencies @ 1960 MHz; highest conducted power = 43.50 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 1.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (1.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (22387.21 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (22387.21 * 2.51 / 4\pi * 1.0)^{1/2} = 66.9 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 1960 MHz; highest conducted power = 43.5 dBm therefore, **Occupational/Controlled Exposure: 5.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (5.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (22387.21 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (22387.21 * 2.51 / 4\pi * 5.0)^{1/2} = 29.9 \text{ cm}$$

### **Part 24, Mid Channel, WCDMA**

MPE Limit Calculation: EUT's operating frequencies @ 1987.6 MHz; highest conducted power = 41.39 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 1.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (1.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (13772 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (13772 * 2.51 / 4\pi * 1.0)^{1/2} = 52.4 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 1987.6 MHz; highest conducted power = 41.39 dBm therefore, **Occupational/Controlled Exposure: 5.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (5.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (13772 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (13772 * 2.51 / 4\pi * 5.0)^{1/2} = 23.4 \text{ cm}$$

### **Part 27, Mid Channel, CDMA**

MPE Limit Calculation: EUT's operating frequencies @ 2132 MHz; highest conducted power = 43.35 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 1.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (1.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (21627.2 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (21627.2 * 2.51 / 4\pi * 1.0)^{1/2} = 65.7 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 2132 MHz; highest conducted power = 43.35 dBm therefore, **Occupational/Controlled Exposure: 5.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (5.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (21627.2 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (21627.2 * 2.51 / 4\pi * 5.0)^{1/2} = 29.4 \text{ cm}$$

### Part 27, Mid Channel, WCDMA

MPE Limit Calculation: EUT's operating frequencies @ 2152.6 MHz; highest conducted power = 41.81 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 1.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (1.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (15170.5 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (15170.5 * 2.51 / 4\pi * 1.0)^{1/2} = 55 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 2152.6 MHz; highest conducted power = 41.81 dBm therefore, **Occupational/Controlled Exposure: 5.0 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 4 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (5.0 mW/cm<sup>2</sup>)  
P = Power Input to antenna (15170.5 mW)  
G = Antenna Gain (2.51 numeric)

$$R = (15170.5 * 2.51 / 4\pi * 5.0)^{1/2} = 24.6 \text{ cm}$$

## **Part 90, TDMA**

MPE Limit Calculation: EUT's operating frequencies @ 852.5 MHz; highest conducted power = 37.85 dBm therefore, **Limit for General Population/Uncontrolled Exposure: 0.5683 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (0.5683 mW/cm<sup>2</sup>)  
P = Power Input to antenna (6095.4 mW)  
G = Antenna Gain (2 numeric)

$$R = (6095.4 * 2 / 4\pi * 0.5683)^{1/2} = 41.3 \text{ cm}$$

MPE Limit Calculation: EUT's operating frequencies @ 852.5 MHz; highest conducted power = 37.85 dBm therefore, **Occupational/Controlled Exposure: 2.8417 mW/cm<sup>2</sup>**

EUT maximum antenna gain = 3 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (2.8417 mW/cm<sup>2</sup>)  
P = Power Input to antenna (6095.4 mW)  
G = Antenna Gain (2 numeric)

$$R = (6095.4 * 2 / 4\pi * 2.8417)^{1/2} = 18.5 \text{ cm}$$

Rounded to nearest 20 cm.

**Test Procedures:**

1. The test setup was as described in the EUT Configuration section of this test report. The base station and amplifier were on the outside of the chamber while the antenna was on the inside.
2. The antenna under test was mounted to a 30x30cm ground plane and placed on an 80cm test table.
3. The EUT was set to transmit continuously at the selected frequency and modulation at maximum RF power. The distance between the field intensity probe and the EUT's antenna was equal to the calculated distance R applicable either for controlled or uncontrolled environments.
4. Field intensity measurements were taken at different heights of the probe from the ground (0.1 to 2 meters) in 10cm increments, while rotating versus azimuth (from 0° to 360°).
5. Each maximized peak field intensity measurement was recorded.
6. Average values of power density were calculated for the imaginary whole human body (0.1–2.0 m), for the lower part of the body (0.1–0.9 m) and for the upper part of the body (1.0–2.0 m). The results of calculations are shown in the following tables.

**Test Results:** The EUT was compliant with this requirement.

**Test Engineer:** Len Knight

**Test Date:** 01/06/2014



## Part 22, Low Channel

Low Channel 869.7 MHz CDMA Modulation				Low Channel 869.7 MHz CDMA Modulation			
Population/Uncontrolled Exposure 69.3 cm				Occupational/Controlled Exposure 31 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	5.23	5.20908	0.0071975	10	7.49	7.46004	0.0147619
20	5.64	5.61744	0.0083702	20	6.92	6.89232	0.0126006
30	7.79	7.75884	0.0159681	30	8.76	8.72496	0.0201923
40	9.35	9.3126	0.0230039	40	9.85	9.8106	0.0255299
50	11.6	11.5536	0.0354073	50	11.75	11.703	0.036329
60	14.97	14.91012	0.0589686	60	17.38	17.31048	0.0794835
70	18.55	18.4758	0.0905451	70	32.57	32.43972	0.2791341
80	21.41	21.32436	0.1206176	80	53.89	53.67444	0.7641765
90	23.43	23.33628	0.1444514	90	71.79	71.50284	1.3561422
100	25.87	25.76652	0.1761044	100	72.7	72.4092	1.3907406
110	27.77	27.65892	0.202922	110	61.18	60.93528	0.9849094
120	27.9	27.7884	0.2048263	120	47.5	47.31	0.5936966
130	28.42	28.30632	0.2125326	130	39.27	39.11292	0.4057879
140	26.29	26.18484	0.1818689	140	31.5	31.374	0.2610949
150	24.98	24.88008	0.1641959	150	25.51	25.40796	0.1712372
160	21.86	21.77256	0.1257412	160	19.07	18.99372	0.0956927
170	19.82	19.74072	0.1033676	170	14.87	14.81052	0.0581834
180	18.05	17.9778	0.0857298	180	14.25	14.193	0.0534327
190	17.9	17.8284	0.0843108	190	12.05	12.0018	0.0382077
200	15.87	15.80652	0.0662722	200	9.67	9.63132	0.0246054

Population/Uncontrolled Exposure 69.3 cm		3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points		Averaged Power Density
Whole Body (0.1 m to 2.0 m)		0.106
Lower Body (0.1 m to 0.9 m)		0.056
Upper Body (1.0 m to 2.0 m)		0.146
Occupational/Controlled Exposure 31 cm		3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points		Averaged Power Density
Whole Body (0.1 m to 2.0 m)		0.333
Lower Body (0.1 m to 0.9 m)		0.288
Upper Body (1.0 m to 2.0 m)		0.371

## Part 22, Mid Channel

Mid Channel 881.6 MHz GSM Modulation				Mid Channel 881.6 MHz GSM Modulation			
Population/Uncontrolled Exposure 75.9 cm				Occupational/Controlled Exposure 34 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	4.7	4.7	0.0058594	10	7.1	7.1	0.0133714
20	5.39	5.39	0.0077061	20	6.46	6.46	0.0110694
30	7.04	7.04	0.0131463	30	8.25	8.25	0.0180537
40	8.85	8.85	0.0207752	40	9.21	9.21	0.0224998
50	12.1	12.1	0.0388355	50	10.98	10.98	0.0319789
60	15.86	15.86	0.0667214	60	18.02	18.02	0.0861327
70	19.24	19.24	0.0981903	70	31.11	31.11	0.2567194
80	21.86	21.86	0.1267532	80	42.34	42.34	0.4755108
90	23.95	23.95	0.1521492	90	59.44	59.44	0.9371654
100	26.04	26.04	0.1798625	100	62.52	62.52	1.0368038
110	27.79	27.79	0.2048499	110	55.63	55.63	0.8208745
120	27.14	27.14	0.1953792	120	45.66	45.66	0.5530068
130	26.91	26.91	0.1920817	130	38.5	38.5	0.3931698
140	25.01	25.01	0.1659151	140	32.33	32.33	0.277249
150	23.69	23.69	0.1488637	150	27.85	27.85	0.2057354
160	22.03	22.03	0.1287323	160	21.44	21.44	0.1219293
170	20.07	20.07	0.1068448	170	16.14	16.14	0.069098
180	18.52	18.52	0.0909789	180	14.72	14.72	0.0574744
190	17.55	17.55	0.0816983	190	13.87	13.87	0.0510284
200	16.4	16.4	0.0713422	200	12.03	12.03	0.0383875

Population/Uncontrolled Exposure 75.9 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.105
Lower Body (0.1 m to 0.9 m)	0.059
Upper Body (1.0 m to 2.0 m)	0.142
Occupational/Controlled Exposure 34 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.274
Lower Body (0.1 m to 0.9 m)	0.206
Upper Body (1.0 m to 2.0 m)	0.330

## Part 22, High Channel

High Channel 891.6 MHz WCDMA Modulation				High Channel 891.6 MHz WCDMA Modulation			
Population/Uncontrolled Exposure 76.3 cm				Occupational/Controlled Exposure 34 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	4.54	4.55816	0.005511094	10	6.85	6.8774	0.012546056
20	4.67	4.68868	0.005831226	20	6.43	6.45572	0.011054727
30	6.75	6.777	0.012182421	30	8.03	8.06212	0.01724079
40	8.71	8.74484	0.02028441	40	8.83	8.86532	0.020847188
50	12.02	12.06808	0.038630916	50	10.79	10.83316	0.031129272
60	15.66	15.72264	0.065570665	60	19.1	19.1764	0.097542259
70	18.77	18.84508	0.094200806	70	30.5	30.622	0.248728616
80	21.06	21.14424	0.118588564	80	43.06	43.23224	0.495763017
90	22.74	22.83096	0.138263325	90	55.83	56.05332	0.833415035
100	25.47	25.57188	0.173453859	100	60.83	61.07332	0.989376768
110	27.41	27.51964	0.200883444	110	57.32	57.54928	0.87849327
120	25.54	25.64216	0.174408586	120	45.31	45.49124	0.548926503
130	24.44	24.53776	0.159708665	130	36.48	36.62592	0.355824407
140	22.77	22.86108	0.138628376	140	30.89	31.01356	0.255130213
150	21.66	21.74664	0.125442003	150	27.47	27.57988	0.201763868
160	21.17	21.25468	0.119830616	160	22.67	22.76068	0.13741341
170	18.9	18.9756	0.095510184	170	16.75	16.817	0.07501631
180	17.33	17.39932	0.080301416	180	13.74	13.79496	0.050477698
190	16.73	16.79692	0.074837274	190	13.46	13.51384	0.048441345
200	15.63	15.69252	0.065319677	200	12.64	12.69056	0.042718916

Population/Uncontrolled Exposure 76.3 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.095
Lower Body (0.1 m to 0.9 m)	0.055
Upper Body (1.0 m to 2.0 m)	0.128
Occupational/Controlled Exposure 34 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.268
Lower Body (0.1 m to 0.9 m)	0.196
Upper Body (1.0 m to 2.0 m)	0.326

## Part 24, Low Channel

Low Channel 1930.2 MHz GSM Modulation				Low Channel 1930.2 MHz GSM Modulation			
Population/Uncontrolled Exposure 60.4 cm				Occupational/Controlled Exposure 27 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	5.57	6.37208	0.010770134	10	6.94	7.93936	0.016719745
20	5.57	6.37208	0.010770134	20	4.79	5.47976	0.007964926
30	5.72	6.54368	0.011358023	30	8.73	9.98712	0.026456914
40	9.04	10.34176	0.028369231	40	7.34	8.39696	0.018702636
50	12.2	13.9568	0.051669036	50	9.87	11.29128	0.033817773
60	11.85	13.5564	0.048746945	60	19.62	22.44528	0.133631457
70	17.75	20.306	0.109372317	70	20.8	23.7952	0.150188738
80	25.54	29.21776	0.226439655	80	51.42	58.82448	0.917856617
90	29.99	34.30856	0.312222093	90	89.89	102.83416	2.805003836
100	36.66	41.93904	0.466547235	100	64.3	73.5592	1.435266818
110	36.45	41.6988	0.461217486	110	36.73	42.01912	0.468330622
120	26.63	30.46472	0.24618015	120	17.43	19.93992	0.1054643
130	22.51	25.75144	0.175898319	130	11.25	12.87	0.043935517
140	21.77	24.90488	0.164523355	140	11.58	13.24752	0.046550872
150	15.84	18.12096	0.087100581	150	7.32	8.37408	0.018600853
160	16.04	18.34976	0.089313977	160	10.29	11.77176	0.036757118
170	15.15	17.3316	0.079677549	170	6.92	7.91648	0.016623516
180	9.14	10.45616	0.02900034	180	6.94	7.93936	0.016719745
190	7.19	8.22536	0.017946034	190	8.72	9.97568	0.026396337
200	10.44	11.94336	0.037836564	200	7.87	9.00328	0.021501074

Population/Uncontrolled Exposure 60.4 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.133
Lower Body (0.1 m to 0.9 m)	0.090
Upper Body (1.0 m to 2.0 m)	0.169
Occupational/Controlled Exposure 27 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.317
Lower Body (0.1 m to 0.9 m)	0.457
Upper Body (1.0 m to 2.0 m)	0.203

## Part 24, Mid Channel

Mid Channel 1960 MHz CDMA Modulation				Mid Channel 1960 MHz CDMA Modulation			
Population/Uncontrolled Exposure 66.9 cm				Occupational/Controlled Exposure 29.9 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	10.04	11.48576	0.034992754	10	6.88	7.87072	0.016431892
20	6.81	7.79064	0.016099223	20	10.58	12.10352	0.038858142
30	12.46	14.25424	0.05389479	30	9.6	10.9824	0.031992867
40	15.07	17.24008	0.078838291	40	11.2	12.8128	0.043545847
50	8.03	9.18632	0.022384211	50	14.21	16.25624	0.070096907
60	14.91	17.05704	0.077173107	60	18.01	20.60344	0.112599931
70	24.57	28.10808	0.209566091	70	23.43	26.80392	0.190570326
80	27.36	31.29984	0.259862065	80	48.41	55.38104	0.813543658
90	31.3	35.8072	0.340094316	90	89.34	102.20496	2.770783514
100	40.26	46.05744	0.562675804	100	83.13	95.10072	2.398977969
110	42.22	48.29968	0.618795514	110	39.25	44.902	0.534798303
120	29.3	33.5192	0.298020363	120	26.19	29.96136	0.238112226
130	26.33	30.12152	0.240664713	130	9.27	10.60488	0.029831162
140	30.19	34.53736	0.316400328	140	16.26	18.60144	0.091780788
150	12.2	13.9568	0.051669036	150	8.14	9.31216	0.023001677
160	11.93	13.64792	0.049407353	160	13.26	15.16944	0.061037642
170	11.41	13.05304	0.045194126	170	12.59	14.40296	0.055025267
180	7.64	8.74016	0.020262705	180	7.06	8.07664	0.017302948
190	7.45	8.5228	0.019267406	190	7.6	8.6944	0.020051085
200	9.3	10.6392	0.030024556	200	5.5	6.292	0.010501131

Population/Uncontrolled Exposure 66.9 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.167
Lower Body (0.1 m to 0.9 m)	0.121
Upper Body (1.0 m to 2.0 m)	0.205
Occupational/Controlled Exposure 29.9 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.378
Lower Body (0.1 m to 0.9 m)	0.454
Upper Body (1.0 m to 2.0 m)	0.316

## Part 24, High Channel

High Channel 1987.6 MHz WCDMA Modulation				High Channel 1987.6 MHz WCDMA Modulation			
Population/Uncontrolled Exposure 52.4 cm				Occupational/Controlled Exposure 23.4 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	4.77	5.40918	0.007761069	10	4.95	5.6133	0.008357861
20	7.68	8.70912	0.020119037	20	7.77	8.81118	0.02059334
30	9.36	10.61424	0.029883844	30	7.94	9.00396	0.021504322
40	11.41	12.93894	0.044407472	40	7.44	8.43696	0.018881245
50	9.76	11.06784	0.032492595	50	8.71	9.87714	0.025877426
60	10.77	12.21318	0.039565455	60	14.33	16.25022	0.070045
70	17.35	19.6749	0.102679493	70	21.51	24.39234	0.157821287
80	23.76	26.94384	0.192565123	80	46.44	52.66296	0.735646514
90	33.56	38.05704	0.384174614	90	93.41	105.92694	2.976264355
100	46.52	52.75368	0.738183224	100	60.34	68.42556	1.241925003
110	38.67	43.85178	0.510073902	110	26.2	29.7108	0.234146323
120	26.82	30.41388	0.245359177	120	8.31	9.42354	0.023555201
130	25.8	29.2572	0.227051393	130	8.33	9.44622	0.023668719
140	13.57	15.38838	0.062812265	140	7.43	8.42562	0.018830523
150	10.62	12.04308	0.038471028	150	7.55	8.5617	0.019443689
160	11.31	12.82554	0.043632487	160	7.36	8.34624	0.01847738
170	5.79	6.56586	0.011435151	170	8.81	9.99054	0.026475037
180	9.56	10.84104	0.031174575	180	8.71	9.87714	0.025877426
190	6.15	6.9741	0.012901345	190	6.63	7.51842	0.014993804
200	6.23	7.06482	0.013239173	200	7.56	8.57304	0.019495229

Population/Uncontrolled Exposure 52.4 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.139
Lower Body (0.1 m to 0.9 m)	0.095
Upper Body (1.0 m to 2.0 m)	0.176
Occupational/Controlled Exposure 23.4 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.285
Lower Body (0.1 m to 0.9 m)	0.448
Upper Body (1.0 m to 2.0 m)	0.152

## Part 27, Low Channel

Low Channel 2111.25 MHz CDMA Modulation				Low Channel 2111.25 MHz CDMA Modulation			
Population/Uncontrolled Exposure 64.4 cm				Occupational/Controlled Exposure 28.8 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	5.13	5.81742	0.008976757	10	5.55	6.2937	0.010506806
20	8.35	9.4689	0.023782511	20	4.74	5.37516	0.007663752
30	7.63	8.65242	0.019857924	30	6.08	6.89472	0.012609327
40	6.65	7.5411	0.0150844	40	6.15	6.9741	0.012901345
50	7.55	8.5617	0.019443689	50	11.93	13.52862	0.048547363
60	12.87	14.59458	0.056499142	60	13.02	14.76468	0.057823813
70	14.41	16.34094	0.070829263	70	19.1	21.6594	0.124437562
80	17.55	19.9017	0.105060388	80	42.52	48.21768	0.616696198
90	24.7	28.0098	0.208103155	90	74.26	84.21084	1.881025351
100	27.04	30.66336	0.249400967	100	64.4	73.0296	1.414674397
110	33.18	37.62612	0.375523848	110	34.57	39.20238	0.407646312
120	26.35	29.8809	0.236835062	120	17.74	20.11716	0.107347514
130	26.79	30.37986	0.244810582	130	8.11	9.19674	0.02243502
140	19.15	21.7161	0.12508992	140	3.9	4.4226	0.005188167
150	19.18	21.75012	0.125482154	150	5.37	6.08958	0.009836335
160	10.6	12.0204	0.038326264	160	3.85	4.3659	0.00505599
170	8.64	9.79776	0.025463157	170	6.38	7.23492	0.013884368
180	9.38	10.63692	0.030011689	180	4.05	4.5927	0.005594932
190	9.87	11.19258	0.033229137	190	7.76	8.79984	0.020540367
200	8.7	9.8658	0.02581804	200	6.6	7.4844	0.01485842

Population/Uncontrolled Exposure 64.4 cm		4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points		Averaged Power Density
Whole Body (0.1 m to 2.0 m)		0.102
Lower Body (0.1 m to 0.9 m)		0.059
Upper Body (1.0 m to 2.0 m)		0.137
Occupational/Controlled Exposure 28.8 cm		4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points		Averaged Power Density
Whole Body (0.1 m to 2.0 m)		0.240
Lower Body (0.1 m to 0.9 m)		0.308
Upper Body (1.0 m to 2.0 m)		0.184

## Part 27, High Channel

High Channel 2152.6 MHz WCDMA Modulation				High Channel 2152.6 MHz WCDMA Modulation			
Population/Uncontrolled Exposure 53.7 cm				Occupational/Controlled Exposure 24 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	5.4	6.0696	0.009771895	10	4.6	5.1704	0.007090991
20	7.5	8.505	0.019187009	20	4.89	5.49636	0.008013256
30	7.43	8.42562	0.018830523	30	4.2	4.7208	0.005911393
40	7.3	8.2782	0.018177346	40	5.63	6.32812	0.010622043
50	3.78	4.28652	0.004873807	50	5.42	6.09208	0.009844413
60	6.54	7.41636	0.014589495	60	11.62	13.06088	0.045248431
70	14.48	16.42032	0.071519074	70	13.66	15.35384	0.062530611
80	19.52	22.13568	0.129970379	80	41.46	46.60104	0.576036321
90	26.53	30.08502	0.240081811	90	74.08	83.26592	1.839048656
100	30.35	34.4169	0.314197084	100	47.2	53.0528	0.74657814
110	27.77	31.49118	0.263048917	110	20.29	22.80596	0.137960693
120	24.55	27.8397	0.205583262	120	13.32	14.97168	0.059456552
130	20.43	23.16762	0.142370986	130	5.19	5.83356	0.009026637
140	14.48	16.42032	0.071519074	140	6.74	7.57576	0.015223379
150	6.96	7.89264	0.016523545	150	5.34	6.00216	0.009555948
160	9.56	10.84104	0.031174575	160	4.33	4.86692	0.006283
170	3.82	4.33188	0.004977502	170	6.42	7.21608	0.013812151
180	5.51	6.24834	0.010355903	180	6.9	7.7556	0.01595473
190	7.22	8.18748	0.017781122	190	4.51	5.06924	0.006816232
200	6.29	7.13286	0.013495409	200	5.65	6.3506	0.010697645

Population/Uncontrolled Exposure 53.7 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.081
Lower Body (0.1 m to 0.9 m)	0.059
Upper Body (1.0 m to 2.0 m)	0.099
Occupational/Controlled Exposure 24 cm	4 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.180
Lower Body (0.1 m to 0.9 m)	0.285
Upper Body (1.0 m to 2.0 m)	0.094



## Part 90, Low Channel

Low Channel 851.0125 MHz TDMA Modulation Population/Uncontrolled Exposure 38.2 cm				Low Channel 851.0125 MHz TDMA Modulation Occupational/Controlled Exposure 20 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	4.31	4.29276	0.004888008	10	4.4	4.3824	0.005094278
20	4.34	4.32264	0.004956291	20	4.96	4.94016	0.006473523
30	4.51	4.49196	0.005352176	30	6.07	6.04572	0.009695154
40	5.77	5.74692	0.008760501	40	6.6	6.5736	0.011462127
50	8.82	8.78472	0.020469842	50	8.62	8.58552	0.01955203
60	11.07	11.02572	0.032245756	60	11.18	11.13528	0.032889777
70	17.21	17.14116	0.077936171	70	23.57	23.47572	0.146182873
80	24.7	24.6012	0.160535555	80	66.18	65.91528	1.152473246
90	32.05	31.9218	0.270292126	90	72.22	71.93112	1.372436611
100	34.6	34.4616	0.31501376	100	57.08	56.85168	0.857324541
110	32.63	32.49948	0.280163448	110	42.21	42.04116	0.468822051
120	28.81	28.69476	0.218405637	120	28.8	28.6848	0.218254045
130	22.77	22.67892	0.136427961	130	20.8	20.7168	0.113842388
140	19.2	19.1232	0.097001798	140	16.58	16.51368	0.072334649
150	15.85	15.7866	0.066105236	150	12.24	12.19104	0.039422137
160	13.22	13.16712	0.045987546	160	9.05	9.0138	0.02155135
170	10.24	10.19904	0.027591623	170	7.52	7.48992	0.014880345
180	9.02	8.98392	0.021408705	180	6.76	6.73296	0.012024602
190	8.23	8.19708	0.017822844	190	5.69	5.66724	0.00851926
200	6.82	6.79272	0.012239004	200	4.89	4.87044	0.006292092

Population/Uncontrolled Exposure 38.2 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.091
Lower Body (0.1 m to 0.9 m)	0.065
Upper Body (1.0 m to 2.0 m)	0.113
Occupational/Controlled Exposure 20 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.229
Lower Body (0.1 m to 0.9 m)	0.306
Upper Body (1.0 m to 2.0 m)	0.167

## Part 90, High Channel

High Channel 868.9875 MHz TDMA Modulation				High Channel 868.9875 MHz TDMA Modulation			
Population/Uncontrolled Exposure 36.5 cm				Occupational/Controlled Exposure 20 cm			
	Raw	Corrected V/m	PD mW/cm2		Raw	Corrected V/m	PD mW/cm2
10	3.62	3.60552	0.003448216	10	3.82	3.80472	0.00383976
20	3.48	3.46608	0.003186661	20	4.03	4.01388	0.004273537
30	3.76	3.74496	0.003720086	30	4.7	4.6812	0.005812635
40	5.02	4.99992	0.006631088	40	5.45	5.4282	0.007815744
50	6.36	6.33456	0.010643674	50	6.66	6.63336	0.011671476
60	8.11	8.07756	0.01730689	60	9.76	9.72096	0.025065534
70	14.07	14.01372	0.052091339	70	19.02	18.94392	0.09519154
80	20.68	20.59728	0.112532611	80	48.1	47.9076	0.608789957
90	26.5	26.394	0.184786004	90	55.03	54.80988	0.796849588
100	28.31	28.19676	0.210890524	100	44.96	44.78016	0.531899928
110	25.7	25.5972	0.173797519	110	34.04	33.90384	0.304899302
120	22.34	22.25064	0.131323867	120	24.19	24.09324	0.153974592
130	19.55	19.4718	0.100570556	130	17.94	17.86824	0.084688064
140	15.76	15.69696	0.065356645	140	13.12	13.06752	0.045294451
150	12.7	12.6492	0.042440918	150	10.41	10.36836	0.028515355
160	10.23	10.18908	0.027537759	160	8.65	8.6154	0.01968836
170	8.9	8.8644	0.020842861	170	6.04	6.01584	0.009599557
180	7.54	7.50984	0.014959601	180	5.12	5.09952	0.006897906
190	6.34	6.31464	0.010576838	190	4.58	4.56168	0.005519609
200	5.4	5.3784	0.007672994	200	4.37	4.35252	0.005025048

Population/Uncontrolled Exposure 36.5 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.060
Lower Body (0.1 m to 0.9 m)	0.044
Upper Body (1.0 m to 2.0 m)	0.073
Occupational/Controlled Exposure 20 cm	3 dBi MLPVDB800/1900S
Part of the Body/Averaging Points	Averaged Power Density
Whole Body (0.1 m to 2.0 m)	0.138
Lower Body (0.1 m to 0.9 m)	0.173
Upper Body (1.0 m to 2.0 m)	0.109

**Photograph 1. Test Setup**



## IV. Test Equipment

## Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ANSI/NCSL Z540-1-1994 and ANSI/ISO/IEC 17025:2000.

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1T4148	SHIELD ROOM #2 SEMI-ANECHOIC	RANTEC	20	SEE NOTE	
1T4768	FIELD PROBE	NARDA	EP183 / OR03	07/13/2013	07/13/2014

**Table 4. Test Equipment List**

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.



## End of Report