

# **SECTION 2**

## **TESTS AND MEASUREMENTS**

## TEST AND MEASUREMENTS

### 2.1 Configuration of Tested System

The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992). Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. Interconnecting cables were manipulated as necessary to maximize emissions. A block diagram of the tested system is shown in Figure 1. Test configuration photographs for spurious and fundamental emissions are shown in Figure 2.

The sample used for testing was received by U.S. Technologies on January 10, 2006 in good condition.

The EUT was originally approved for use with one of 15 different antennas. Cirronet Corporation desires to retest with fifteen (15) of the antennas from their original grant of certification.

Since the EUT has been previously tested and approved, only the spurious emissions and Band Edge tests have been repeated.

### 2.2 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and submitted to the FCC, and accepted in their letter marked 31040/SIT. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number IC2982.

### 2.3 Test Equipment

Table 2 describes test equipment used to evaluate this product.

### 2.4 Modifications

No modifications were made by US Tech, to bring the EUT into compliance with FCC Part 15, Class B Limits for the transmitter portion of the EUT.

**FIGURE 1  
TEST CONFIGURATION  
(All Antennas)**

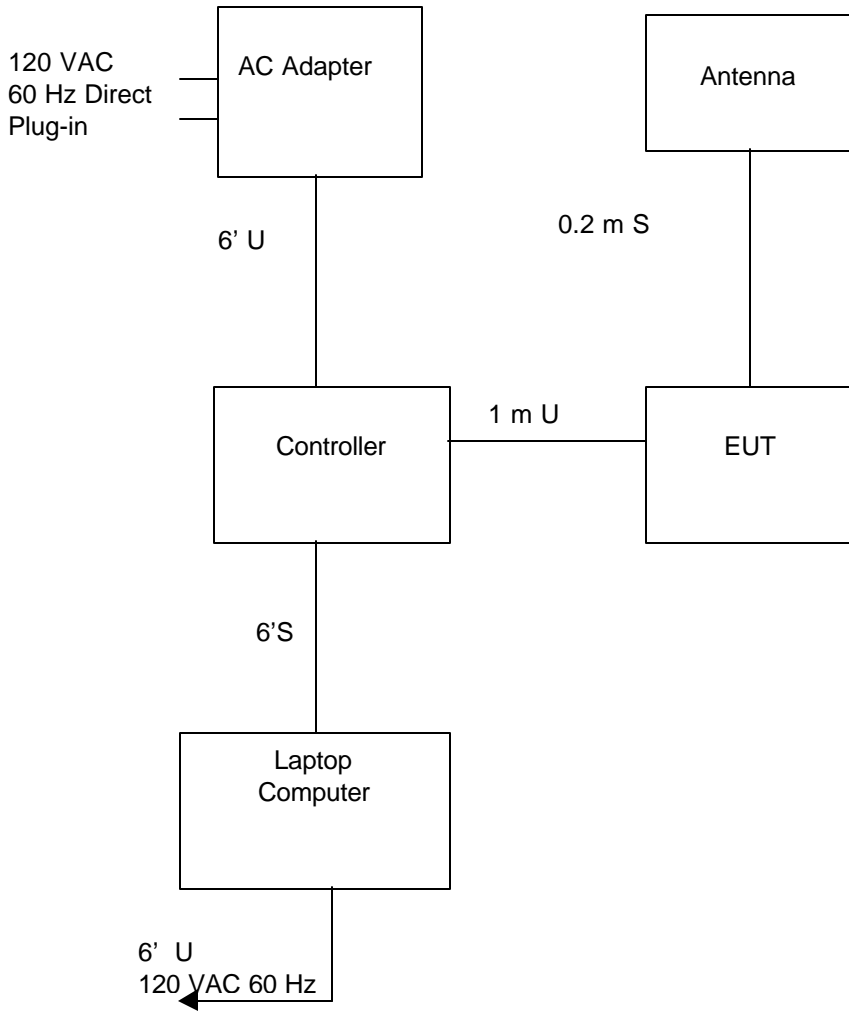


TABLE 1

**Test Date:** February 2, 2006  
**UST Project:** 06-0003  
**Customer:** Cirronet Corporation  
**Model:** WIT 2450

**EUT and Peripherals**

PERIPHERAL MANU.	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
(EUT) Cirronet Corporation	WIT 2450	008517	HSW-2410M	1 m U
Antenna Various, see antenna descriptions			None	Varied from 0.2 to 1 m S
AC Adapter Volgen	SPU10R-1	None	None	6' U 120 VAC/ 60 Hz Direct Plug-in
Controller Cirronet Corporation	None	None	None	6' S
Laptop Computer Compaq	Armada 7400	7908BXL2036	Not Visible	6' U 120 VAC/ 60 Hz Power Cord

**TABLE 2  
TEST INSTRUMENTS**

<b>EQUIPMENT</b>	<b>MODEL NUMBER</b>	<b>MANUFACTURER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>
SPECTRUM ANALYZER	8558B	HEWLETT-PACKARD	2332A10055	2/25/05
SPECTRUM ANALYZER	8593E	HEWLETT-PACKARD	3205A00124	7/05/05
SIGNAL GENERATOR	8648B	HEWLETT-PACKARD	3642U01679	9/15/05
RF PREAMP	8447D	HEWLETT-PACKARD	2944A06291	4/6/05
BICONICAL ANTENNA	3110B	EMCO	9307-1431	5/31/05
LOG PERIODIC	3146	EMCO	3110-3236	6/3/05
LISN (x 2) 8028-50-TS24-BNC	8028	SOLAR ELE.	910494 & 910495	3/11/05
HORN ANTENNA	SAS-571	A. H. SYSTEMS	605	04/1/05
PREAMP	8449B	HEWLETT PACKARD	3008A00480	06/30/05
CALCULATION PROGRAM	N/A	N/A	Ver. 6.0	N/A

## 2.5 Antenna Description (Paragraph 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

### Previously Approved Antennas

Cirronet Corporation will sell the WIT 2450 with one of the following antennas.

MANUFACTURER	TYPE OF ANTENNA	MODEL	GAIN dB	TYPE OR CONNECTOR
ACE	Dipole	ACE-2400NF	2 dBi	Reverse SMA to MMCX via adapter cable
Cushcraft	Yagi	PC2415-RTNF	15 dBi	Reverse TNC to MMCX via adapter cable
Mobile Mark	Omni-Directional	OD6-2400-RNTC	6 dBi	Reverse TNC to MMCX via adapter cable
Mobile Mark	Corner Reflector	SCR14-2400PTA-RTNC	14 dBi	Reverse TNC to MMCX via adapter cable
Digital Wireless Corporation	Patch	PA2400	Appx. 3 dBi	Reverse TNC to MMCX via adapter cable
Mobile Mark	Vehicle Mount Stub	RM3-2400-RTNC	2.5 dBi	Reverse TNC to MMCX via adapter cable
Mobile Mark	Corner Reflector	SCR9-2400-RN	9 dBi	Reverse N to MMCX via adapter cable
MaxRad	Whip	MUF24005.RTNC	5 dBi	Reverse TNC to MMCX via adapter cable
Andrews	Parabolic Dish	26T-2400A	24 dBi	Reverse N to MMCX via adapter cable
Hyperlink Technologies, Inc.	Parabolic Dish	2424GC	24 dBi	Reverse N to MMCX via adapter cable
Andrews	Parabolic Dish	18T-2400 A	18 dBi	Reverse N to MMCX via adapter cable
MaxRad	Whip Magnetic Mount (Mobile Vehicle Whip)	MUF24005.RTNC	5 dBi	Reverse TNC to MMCX via adapter cable
Mobile Mark	Omni	OD9-2400MUF24005	9 dBi	Reverse TNC to MMCX via adapter cable
Cirronet Corporation	Patch	GA Tech	12 dBi	Non-standard MMCX
Cirronet Corporation	Patch	PA2410	6dBi	Non-standard MMCX

To ensure compliance with 15.203, Cirronet Corporation attaches reverse-sex TNC or N connectors to all antennas except the 12 dBi and 6 dBi Patch antennas.

Cirronet Corporation. has arranged for the manufacturers of the antennas to provide reverse-sex TNC or N connectors for these antennas. OEM customers wanting to use one of these antennas in their product will first need to obtain a special part number from Cirronet

Corporation to give to the antenna manufacturer. The manufacturer, upon receipt of this number, will know to attach the reverse-sex TNC or N connector (or SMA in the case of the dipole) to the end of the antenna cable before shipping.

The customer then purchases an adapter cable from Cirronet Corporation that will connect the MMCX port on the module to the reverse-sex connector on the antenna. No other type of commercially available antenna will attach to this reverse-sex TNC or N connector (or SMA for the case of the dipole). Given the nonstandard nature of the interconnect between module and antenna and the difficulty involved in circumventing that connection, Cirronet Corporation feel that this procedure meets the requirements called out in 15.203.