

WTM1100 Wireless Modem Card Users Guide

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Chapter

Chapter 1: Introduction

This guide will assist you with the use, installation, and configuration of the WTM1100 Wireless Modem Card (WMC). The WTM1100 is in a half mini-PCIe form factor. Due to the physical similarities of WMC cards, many of the explanations and procedures described in this manual apply to other Motorola WMC cards (HTM1000, LTM1000) except where expressly noted.

In addition, a section describing the Radio Statistics application, which is used for direct user interface with the Wireless Modem Card, is also included.

The WTM1100 is an IEEE 802.16e Wave 2 compliant, single-band Half Mini-PCIe wireless network adapter that operates in the 2.5 GHz or 3.5 GHz spectrum for WiMAX connectivity. This product is available in Half-Mini Card form factor with optional extender for Full-Mini slots. This integrated module provides high performance broadband wireless connectivity to a wide range of next generation mobile, low power consumer electronic devices to enhance today's mobile lifestyles.



Figure 1-1 WTM1100 Dimensions

Signal	PIN(s)	Signal	Direction	Description
	02, 24, 39, 41, 52	+3.3VAUX		3.3V Source
Power	04, 09, 15, 18, 21, 26, 27, 29, 34, 35, 37, 40, 43, 50	GND		Ground
Universal	38	USB_D+	Input/Output	USB2.0 Serial Data Interface
(USB)	36	USB_D-	Input/Output	USB2.0 Serial Data Interface
Auxiliary Signals (3.3V Compliant)	22	PERST#	Input	System Power Stable Indication and Functional Reset
	44	LED_WLAN#	Output	LED Status Indicator (Open Drain Active Low)
Mini-PCIe Interface	42	LED_WWAN#	Output	LED Status Indicator (Open Drain Active Low)
Specific	20	W_DISABLE#	Input	Disable Radio Operation
Signals	03	COEX1	Input	Wireless Coexistence
	05	COEX2	Output	Wireless Coexistence

Table 1-1 Pin Designators

WTM1100 PCIe Half-Mini Card Specifications		
Standard	IEEE 802.16e WiMAX Forum® Comp	liant Wave 2, CRSL 6.0
Frequency Band	2.495GHz - 2.695GHz	3.3GHz - 3.6GHz
Channel Bandwidth	5MHz, 10MHz	5MHz, 7MHz, 10MHz
Mobile Profile	MP05	MP10, MP11, MP12
Maximum Output Power	23dBm	
Sensitivity	-94dBm (10MHz QPSK-CTC3/4), -88d 81dBm (10MHz 64QAM-CTC3/4)	Bm (10MHz, 16QAM-CTC3/4), -
МІМО	2RX+1TX Supporting MRC,STC Matri	ix A / SM Matrix B
Duplex/Multiple Access	TDD/OFDMA	
RF Modulation	BPSK/QPSK/16QAM/64QAM	
FFT	512 and 1024	
Decoder Engine	Quad FEC, 34Mbps Downlink Through	put
End to End Throughput	DL - 16Mbps ; UL - 4.5Mbps	
Bursts	64 Concurrent Downlink, 7 Concurrent	Uplink
Payload	IP Header Suppression, IPv4, IPv6, Pac	king/Fragmentation, ARQ
QoS	BE, UGS, RT-VR, NRT-VR, ERT-VR	
Antenna Connector	Hirose UFL Ultra-Miniature SMT	
Host Interface	Mini-PCI Express v1.2 (USB 2.0 Electr	ical Interface)
	Security	
Authentication	EAP-TLS, EAP-TTLS, PKMv2, CMA	C and Security Associations
Cryptographic Suites	3-DES,128 CCM-Mode, 128-AES, AE	ES Key Wrap
	Device Driver	
Client Software	Connection Manager, Radio Statistics,	WTM1100 Configuration
Supported Operation Systems	Windows XP, Linux, Windows Mobile	6.0
Planned OS Support	Windows CE 6.0, Android, Windows V	ista, Windows 7
	Power (RMS)	
Supply	3.3V DC	
Power Consumption (TX) High Power	2.07W	
Power Consumption (TX) Low Power	1.79W	
Power Consumption (Rx)	1.12W (HD Video Streaming)	
Sleep Mode	<3mW	
	8mw</td <td></td>	
Dimension	Physical	1-1)
LED Indiastors	30mm x 26.8mm x 4.5mm (Double Sid	ded)
	EEDwEAN# of LEDw wAN# Suppo	neu
Ambient Temperature Range	-25° C to $+65^{\circ}$ C (Ambient Temperatur	a Exposed to Card)
Anotone remperature Kange	Available Ontions	
USB Adapter	USB Dongle Adaptor Roard w/ Intern	al Antennas
Card Slot Extender	PCIe Half-Mini to Full-Mini extensior	

Table 1-2 WTM1100 Specifications

General System Requirements

Host computers must comply with the following minimum requirements to ensure optimal performance of the WTM1100 WMC.

Windows XP Minimum System Requirements

- Laptop or Notebook PC running the Microsoft Windows XP (Service Pack 2) operating system
- 500 MHz Processor
- 10 MB of available hard disk storage
- Keyboard, Mouse, CD-ROM drive or DVD drive
- Available MINI-PCIE V2 card slot in the Host device

Ubuntu 8.04 Minimum System Requirements

- Laptop or Notebook PC running the Ubuntu 8.04 operating system and/or LiveCD provided by Motorola
- 500 MHz Processor
- 10 MB of available hard disk storage
- Keyboard, Mouse, CD-ROM drive or DVD drive
- Available MINI-PCIE V2 card slot in the Host device
- Update and Install packages (ssh, libpcre3, libgtk2.6-0, iperf)

What's in the Box

Each WTM1100 WMC is a full-featured wireless networking interface. The following is a list of the items provided with each Wireless Modem Card:

- WTM1100 Wireless Modem Card
- Half to Full MINI PCIE card extender (Optional)
- WTM1100 Wireless Modem Card Software and Documentation CD ROM

The CD ROM contains a PDF version of the Wireless Modem Card User's Guide. The CD also contains an installation executable to load Adobe Acrobat Reader software if it is not already resident on your computer.

External Connections

The WTM1100 Wireless Modem Card is designed for insertion into an industry-standard MINI-PCIE V2 card slot located in a Host device. The Wireless Modem Card has two antenna ports to connect the external antennas. As shown in Figure 1-2 the left antenna UFL connector is the main transmit /receiver and the right is the secondary receiver.





Chapter 2: Software Installation

This chapter will assist you with the software installation portion of the process and is further separated into two main sections: *Installing WTM1100 Client Software on Windows XP* and *Installing WTM1100 Client Software on Ubuntu 8.04*.

Installing WTM1100 Client Software on Windows XP

The following procedure outlines the installation of the WTM1100 client software on a typical Windows XP platform. Some of the steps may vary slightly based on the configuration of the individual computers.

Procedure 2-1	WTM1100 Client Software Installation on Windows XF
---------------	--

1	Close and exit any existing WTM1100 applications running on the computer prior to installation.
2	Insert the Software and Documentation CD into the CD-ROM drive.
3	If the installation program does not start automatically, open the Windows Start menu. Click on Run then type the following into the dialog box: d:WiMAX_WTM1100_Installation.msi where d: specifies the CD-ROM drive and click the OK button.
4	Click the Next button to continue the installation process.
5	The WTM1100 Setup dialog box will be displayed as shown in Figure 2-3.



7	The <i>Select Installation Folder</i> dialog box displays the Install Folder location. Click the Next button continue the installation process.	to
	Figure 2-4 WTM1100 Setup – Startup Options (XP)	
	₩TM1100	
	Select Installation Folder	
	The installer will install WTM1100 to the following folder.	
	To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".	
	Eolder: C:\Program Files\Motorola\Browse	
	Disk Cost	
	Cancel < Back Next >	
8	The <i>Confirm Installation</i> dialog confirms the installation is ready to commence. Click on the Next button to proceed with the installation process.	
	Figure 2-5 WIM1100 Setup - Ready to Install (XP)	

Confirm Installation			
The installer is ready to install WTM1	100 on your computer.		•••
Click "Next" to start the installation.			
	Cancel	< Back	Next >

_

9	The <i>Installing WTM1100</i> window displays a status bar to indicate the progress of the installation and will be automatically dismissed as soon as file installation has completed.					
	Figure 2-6	WTM1100 Setu	p - Installing F	iles Window (X	(P)	
	🔂 WTM1100					×
	Installing	WTM1100).e
	WTM1100 is b	eing installed.				
	Please wait.					
			Cancel	< Back	Next >	
10	•					

11	A <i>Software Installation</i> dialog indicates that the software is not Windows Logo tested. Select the Continue Anyway button to complete the installation process.					
	Figure 2-7	Software Installation Dialog Box				
	Hardware Ins	tallation				
	1 Th	ne software you are installing for this hardware:				
	Mo	otorola 4G NDIS				
	ha wil	is not passed Windows Logo testing to verify its compatibility th Windows XP. (<u>Tell me why this testing is important.</u>)				
	Co or eil re co pa	ontinuing your installation of this software may impair destabilize the correct operation of your system ther immediately or in the future. Microsoft strongly commends that you stop this installation now and ontact the hardware vendor for software that has assed Windows Logo testing.				
		Continue Anyway STOP Installation				
12	If a second <i>Software Installation</i> dialog box is displayed as shown in Figure 2-8. Click on the Continue Anyway button to complete the installation process.					
	Figure 2-8 Software Installation Dialog Box					
	Software Installation					
	Th tes this	e software you are installing has not passed Windows Logo ting to verify its compatibility with Windows XP. (<u>Tell me why</u> <u>s testing is important.</u>)				
	Co or eit rea co	Intinuing your installation of this software may impair destabilize the correct operation of your system ther immediately or in the future. Microsoft strongly commends that you stop this installation now and intact the software vendor for software that has used Windows Loop testing				
	ha					
		Continue Anyway STOP Installation				
13	Select the Cont screen contents	tinue Anyway button if additional windows display on the screen containing the same as in the step above.				

🙀 WTM1100		
WTM110	0 Information	
		<u>.</u>
installa device. internal driver i continue unsigned the WiMA details User Mar	tion by triggering a USB enumera For external devices, plug in t devices, reboot the PC. Expect nstallations to occur. Allow in when confronted with warning me drivers. Once these installati X device should be operational. about operation of the WiMAX dev ual.	ativer ation of the WiMAX the device; for two separate stallation to ssage concerning ons are complete, For further rice, refer to the
For any wimax.ch <mailto:< td=""><td>issues please contact Motorola a <u>ipset@motorola.com</u> wimax.chipset@motorola.com>.</td><td>lt</td></mailto:<>	issues please contact Motorola a <u>ipset@motorola.com</u> wimax.chipset@motorola.com>.	lt

15	From the WTM1100 Installed Successfully dialog click on the Finish button to exit.
	Figure 2-10 WTM1100 Setup - WTM1100 Installed Successfully (XP)
	₩TM1100
	Installation Complete
	WTM1100 has been successfully installed.
	Click "Close" to exit.
	Cancel < Back Close

Installing WTM1100 Client Software on Ubuntu 8.04

The following procedure outlines the installation of WTM1100 client software on a typical Ubuntu 8.04 platform. Some of the steps may vary slightly based on the configuration of an individual computer.

Complete the following procedure to install the WTM1100 client software:

1	Remove any existing WTM1100 applications running on the computer prior to installation.	
2	Insert the WTM1100 Software and Documentation CD into the CD-ROM drive.	
3	Open a terminal window.	
4	Set the linux root password >>sudo passwd	
5	Install the WTM1100 software package using the following command >>dpkg –i /media/CDROM/WiMAX_WTM1100_Installation.deb	

Procedure 2-2 WTM1100 Client Software Installation on Windows 2000

Chapter 3: WTM1100 Installation

This chapter will assist you with the physical installation and configuration of the WTM1100 Wireless Modem Card.

Working with the Card Extender

The following sections will focus on the proper handling and usage of the card extender and ESD when using a WTM1100 card.

Connecting the Card Extender Assembly

Complete the following procedure to connect the Card Extender Assembly to the WTM1100 WMC for use in a standard laptop computer.



Always wear a static strap when working with the WTM1100.

Procedure 3-3 Connecting the Card Extender Assembly

Locate the Card Extender adapter and align it with the WTM1100, as shown below in Figure 3-11. The provided mating screws should come up from underneath the card with the thread protruding from the top.
 Figure 3-11 Attach the Card Extender to the WTM1100



Installing the WTM1100

The following sections will describe the proper installation and removal of the WTM1100.

Installing the WTM1100 Wireless Modem Card

Complete the following procedure to install the WTM1100 wireless modem card. The same installation procedure applies to both wireless modem card model numbers.

Procedure 3-4 Installing the Wireless Modem Card





by the laptop vendor (screw or clip) as shown in Figure 3-14. Figure 3-14 Proper Orientation of WTM1100 Inside Laptop Vendor Screw Fastener for Full Mini-PCIe slot. States of the second 214 $\overline{}$ ne 4 Connect the provided laptop antennas to the UFL connectors on the WTM1100 card. The UFL connectors will snap down when properly connected to the WTM1100. In the Figure 3-15 below, the blue antenna lead is for the MAIN antenna and the white is for the AUX antenna. Figure 3-15 Connecting Internal Antennas to the WTM1100 Card. Internal Antenna Leads

The WTM1100 must be pushed down and securely fastened in the MINI-PCIe V2 slot by the means provided

3

5 The first time the PC is booted with the WTM1100 card, a message will be displayed indicating that the WTM1100 card has been found. The Windows *Found New Hardware Wizard* for the WTM1100 will start as shown in Figure 3-16. Select "No, not this time" to prevent Windows from searching externally for the WTM1100 DFU driver, and then click on the **Next** button.

Figure 3-16 Found New Hardware Wizard – Serial PC Card

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy
	Can Windows connect to Windows Update to search for software? C Yes, this time only C Yes, now and <u>e</u> very time I connect a device (No, not this time) Click Next to continue.
	< Back Next > Cancel

6 The *Found New Hardware* dialog will display a window to help install the WTM1100 DFU software. Verify that the "Install the software automatically (Recommended)" radio button is selected, and then click on the **Next** button.



Figure 3-17 Found New Hardware Wizard - Loading Files

		Found New Hardware Wizard	
		Please wait while the wizard instal	ls the software
	-	Motorola 4G DFU	1
Hardware	• Installation	_	
1	The software you Motorola 4G DFL	are installing for this hardware:	
	has not passed V with Windows XF	Vindows Logo testing to verify its compatibility P. (Tell me why this testing is important.)	
	Continuing you or destabilize	ur installation of this software may impa the correct operation of your system	bir 🛛
	either immedia recommends th contact the ha	tely or in the future. Microsoft strongly hat you stop this installation now and ardware vendor for software that has	< Back Next > Cance

Found New Hardware Wizard					
Please wa	it while the wizard i	installs the softwa	are	Ø	
H	Motorola 4G DFU				
	\triangleright	Þ	Þ		
	Setting a system case your system	restore point and ba n needs to be restore	cking up old files in d in the future.		







The Found New Hardware dialog will display a window to help install the WTM1100 USB software. Verify

11

Found New Hardware Wizard
Please wait while the wizard installs the software
Motorola 4G USB
The software you are installing for this hardware: Motorola 4G USB
has not passed Windows Logo testing to verify its compatibility with Windows XP. (<u>Tell me why this testing is important.</u>)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

13	The Found New Hardware Wizard will begin installing the WTM1100 USB installation files as shown in Figure 3-24 . Wait for this step to complete.
	Figure 3-24 Found New Hardware Wizard Loading Files
	Please wait while the wizard installs the software
	Motorola 4G USB
	WdfCoInstaller01007.dll To C:\WINDOWS\system32
	< Back Next > Cancel



Removing the WTM1100

This section details specific WTM1100 card removal instruction to ensure that power to the card is disabled prior to removal.

Complete the following procedure prior to ejecting the Wireless Modem Card from the computer.

Procedure 3-5 Removing the WTM1100 Card





Chapter 4: Radio Statistics

Radio Statistics TM is a status and configuration application that reports vital and statistical information about the WTM1100 Wireless Modem Card. Because Radio Statistics is a polling application, it only runs when initiated by the user.

In this chapter you will learn about the available Radio Statistics features and the different ways to start Radio Statistics.

Starting Radio Statistics

During the software installation process, you can choose to run Radio Statistics immediately upon completion of the installation process.

Procedure 4-6 Starting Radio Statistics

To start the Radio Statistics application, double-click on the Radio Statistics icon located on the desktop.

The icon will be available on the desktop only if the election to place it on the desktop has been selected at the time of Radio Statistics installation.

1



Radio Statistics Tab Contents

The following sections will describe the contents of all the available tabs within the Radio Statistics application, and their respective functionality.

Link Tab

💩 W	/TM1100 R	adio Statistics		<u>_ ×</u>			
File	File Execution						
Link	MAC	SFlow Version Settings Inf	o Log				
	Delling Interval (recenter)						
PO							
2							
	Enable	Name	¥alue				
		Signal Strength	-63 dB				
Image: A start of the start		Carrier Noise Interference Ratio	20 dB				
		Center Frequency					
		Transmit Power	-17.0 dB				
		Current Network ID	131841				
		Current Base Station ID	81				
		IP Address	192.168.1.121				
4		MAC Address	00:17:84:FF:7D:1A				
Runni	ing			0			

Figure 4-31 Radio Statistics Link Tab

 Table 4-3
 Link Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Polling Interval	Indicates how often the modem is polled.
Signal Strength	Displays the receive signal strength of the attached WiMAX network.
Carrier Noise Interference Ratio	Displays the CINR of the receive frequency.
Center Frequency	N/A.
Transmit Power	Transmit power of the WTM1100 modem card.
Current Network ID	Network ID of the attached WiMAX network.
Current Base Station ID	ID of the Base station the WTM1100 modem card is attached to.
IP Address	The IP address being used by the WTM1100 modem card.
MAC Address	The MAC address being used by the WTM1100 modem card.

MAC Tab

🛶 WTM1100 Radio Statistics				
File Execution				
Li	ink MAC	SFlow Version Se	ettings Info Log	
F	olling Interva	l (seconds)		
I	2			
-			[]	
	Enable	Name	Value	
Ē	/	RX Modulation	QPSK(CTC)1/2	
Ŀ	•	TX Modulation	QPSK(CTC)1/2	
Ŀ	•	Packets Received	22602	
Ŀ	•	Packets Transmitted	3622	
Ŀ	•	Packets Dropped	0	
Dur	nina			
Rur	ning			🔍 🔍 🤍

Figure 4-32 Radio Statistics MAC Tab

Table 4-4 MAC Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Polling Interval	Indicates how often the modem is polled.
RX Modulation	Indicates the modulation used by the receiver(s).
TX Modulation	Indicates the modulation used by the transmitter.
Packets Received	Displays the number of packets received.
Packets Transmitted	Displays the number of packets transmitted.
Packets Dropped	Displays the number of packets dropped by the network.

SFlow Tab

WTM1100 Radio Statistics				
Link MAC Polling Interval	SFlow Versio (seconds)	n Settings Info Log		
Enable	Name	¥alue		
✓✓	MAC ARQ Packing	Disabled Disabled		
	Fragmentation Service Type	Enabled Undefined		
✓ ✓	CID Max Rate	1987 25000000		
-	Max Burst	0		
Rupping				

Figure 4-33 Radio Statistics SFlow Tab

Table 4-5 SFlow Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Polling Interval	Indicates how often the modem is polled.
MAC ARQ	Displays the status of MAC Automatic Repeat-reQuest algorithm on the WiMAX network.
Packing	
Fragmentation	
Service Type	
CID	
Max Rate	
Max Burst	

Version Tab

👄 WTM1100 Radio Statistics					
File Execution					
Link MAC SFlow Version Settings Info Log					
Polling Interva	Polling Interval (seconds)				
2					
Enable	Name	¥alue			
	WIP Software	ABCxyz			
~	Package	Unknown - Unknown			
Running					

Figure 4-34 Radio Statistics Version Tab

 Table 4-6
 Version Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Polling Interval	Indicates how often the modem is polled.
WIP Software	Displays the version of the WIP software.
Package	Displays the version of the package software.

Settings Tab

🛶 WTM1100 Radio Statistics	<u>_ </u>
File Execution Link MAC SFlow Version Settings Info Log Main Image: Comparison of the set	
Log Files CSV Google Earth GPS Filtering Application Enable Log Level None	
Running	0

Figure 4-35 Radio Statistics Settings Tab

 Table 4-7
 Settings Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Main - Auto Start on link up	Enable or disable Auto Start on link up
Main - Stop polling on program error	Enable or disable stop polling on program error
Main - Service Flows	Service Flow Format IDs
Log Files - CSV	Export log file as CSV
Log Files – Google Earth	Export log file as CSV
Log Files – Application Enable	Enable Application Logs
Log Files – Application Log Level	Set Log level "Normal" or "Verbose"
GPS - Enable	Enable GPS polling
GPS - Port	Com port for attached GPS device

Info Tab

😔 WTM1100 Radio Statistics
File Execution
Link MAC SFlow Version Settings Info Log
_ GPS
Longitude: 0.000000
Latitude: 0.000000
Speed: 0
Packets: 0
Satellite Count: 0
Status: Not detected
Raw: ?
Interface: WiMAX Catawba Ndis
Polls: 22:22
Up: 0
Down: 0
r Files
CSV: C: (Program Files/Motorola/WTM1100/logs/radio_statistics_13_2009-06-08_14-54-13-54.csv
Google Earth: C: (Program Files (Motorola (WTM1100/logs/radio_statistics.km)
Application: C:/Program Files/Motorola/WTM1100/logs/radio_statistics.log
Running 📃 🖯 👹

Figure 4-36 Radio Statistics Info Tab

 Table 4-8
 Info Tab – Radio Statistics Information Section

	Status Tab Item	Explanation
GPS		GPS information
Link		Displays link information on the NDIS interface
Files		Displays the location of the logging files for various formats.

Log Tab

😔 WTM1100 Radio Statistics	
File Execution	
Link MAC SFlow Version Settings Info Log	
15:36:03: OnDataSourceLogEnable(): new value:1 15:36:03: OnDataSourceLogEnable(): new value:0 15:36:05: OnDataSourceLogEnable(): new value:1 15:36:39: di0:x8001: val:-104 dB 15:36:39: di0:x8001 val:-104 dB 15:36:41: di0:x8001 val:-84.0 dB 15:36:41: di0:x7000 val:0.0.0 15:36:41: di0:x7001 val:00:17:84:FF:7D:1A 15:36:44: di0:x8004 val:QP5K(CTC)1/2 15:36:48: di0:x8005 val:QP5K(CTC)1/2 15:36:48: di0:x8006 val:394 15:36:49: di0:x8007 val:0 15:36:49: di0:x8007 val:0 15:36:49: di0:x8001 val:-75 dB 15:36:49: di0:x8015 val:17 dB 15:36:49: di0:x8014 val:3.5 dB 15:36:50: di0:x7001 val:00:17:84:FF:7D:1A	×
र	▼ ►
Running	۱

Figure 4-37 Radio Statistics Log Tab

 Table 4-9
 Log Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Log Window	If logging is enabled, log messages will be displayed.

Chapter 5

Chapter 5: WTM1100 Configuration Tool

WTM1100 Configuration[™] tool is a status and configuration application that reports vital and statistical information about the WTM1100 Wireless Modem Card.

In this chapter you will learn about the available WTM1100 Configuration tool features and the different ways to start WTM1100 Configuration.

The following sections will describe the contents of all the available tabs within the WTM1100 Configuration tool. This application can be used to configure various WiMAX components of the WTM1100 modem card. The following sections provide details on how to configure and use the application. The WiMAX Configuration application is segmented into five separate tabs.

- smeTest connection control commands
- MIB init add or remove entries from the mib_init.xml file
- Configuration specify frequency/spectrum range
- Environment mode selection
- Messages displays contents of /var/log/messages fileRadio Statistics application, and their respective functionality.

smeTest Tab

WTM1100 Configuration	<u>- 0 ×</u>
smeTest MIB Init Configuration Environment Messages Scan Connect Disconnect Handover Status Disconnect Options Graceful Only Disconnect Image: Connect	
	4

Figure 5-38 WTM1100 Configuration smeTest Tab

Table 5-10 smeTest Tab – smeTe3st Information Section

Status Tab Item	Explanation
Scan	Commands the WTM1100 to Scan for networks.
Connect	Commands the WTM1100 to Connect to a network.
Disconnect	Commands the WTM1100 to Disconnect from a network. Use with the Disconnect Options drop box.
Handover	Command the WMT1100 to request a Handover from the network or perform a mobile initiated handover.
Status	Command the WTM11000 to report the status of its current state.
Disconnect Options	Use with the Disconnect button. Options include Graceful or not, Disconnect with DHCP Release or not, etc.

MIB Init Tab

CfgEapStart	tetryTimeout			CfgPrivateKeyPassword	
CfgEapStart	tetryMaxCount			0x8417 wimax	
CfgIdentity			⊟	bcn_sbc_allowed BCNPDUSNExtSubHMgmtConn	
moid	0x8411			473 0	
description	User Identity		=	bcn_sbc_allowed BCNHARQEnableMgmtConn	
access	RW			475 0	
data_type	UINT8[]		=	CfgIdentity	
default_value				0x8411	
min_value			IE.		
max_value			Ш.		
num_index	0		Ш.		
index1			Ш.		
index2			Ш.		
compile_option					
notes					
CfgPassword					
] CfgCaCert					
CfgCaPath		-			

Figure 5-39 WTM1100 Configuration MIB Init Tab

Table 5-11	MIB Init Tab -	- MIB Init Info	mation Section
			mation Section

Status Tab Item	Explanation
Left Hand Text Box	Lists all MOIDs available for use with the WTM1100. When a MIB description is selected, it will highlight "GREEN" and can be expanded by clicking the "+" symbol. Once the MIB value is highlighted, the "Add" button below will become active and if selected will add the MIB to the Text Box on the right.
Right Hand Text Box	Displays all the MIBS currently statically active for the WTM1100. These are loaded to the WTM1100 every time the device is powered up. Click the MIB variable number to the right of the MIB identifier and the field can be edited. Click the "Save" button below once editing is complete. Alternatively a MIB can be removed by selecting the MIB description (highlight RED) and click "Remove".

Configuration Tab

WTM1100 Configuration File	
smeTest MIB Init Configuration Environment Messages MIB	
Channel Plan 2621000 2621000 2621000 10000 Set USB Suspend	
MOID 0x9007 Name prop_sp_asn_attachment_access MIB OID value=0 [0x00] MOID 0x9007 Name prop_sp_asn_attachment_access MIB OID value=1 [0x01]	

Figure 5-40 WTM1100 Configuration Tab

Table 5-12 Configuration Tab – Radio Statistics Information Section

Status Tab Item	Explanation
МІВ	Fields are used to query (GET) or assign (SET) MOID values
Channel Plan	Fields are used to set the channel plan (lower freq, upper freq, step size, and bandwidth)
USB suspend	Used to test USB suspend feature
Text Box	Display results from MOID queries or assignments

Channel Plan Configuration

There are many channels available in the 2.5GHz and 3.5Ghz bands for WiMAX network communications. The Channel Plan section is used to set the spectrum range in the WiMAX_SP_profile.xml file. When the application starts, this information is read from that file and the values are used to populate the WTM1100 Configuration Channel Plan controls. To set new values, simply update the Channel Plan controls and select the Set button. The Set action will update the values in the WiMAX_SP_profile.xml file. The card must be restart or the PC must be rebooted in order for the changes to take effect.

Environment Tab

WTM1100 Configuration	
smeTest MIB Init Configuration Environment Messages Mode Set GHS CATL GHS CATL Min/MAC SJUX0001 Site Site	
	//.

Figure 5-41 WTM1100 Configuration Environment Tab

Table 5-13 Link Tab – Radio Statistics Information Section

Status	a Tab Item	Explanation
Mode	Selects t initialize	he type of SREC to be downloaded to the modem when it es (GHS, CATL, MiniMAC, SJUX00001)

Messages Tab

👄 WTM1100 Configuration	
File	
smeTest MIB Init Configuration Environment Messages	

Figure 5-42 WTM1100 Configuration Messages Tab

Table 5-14 Link Tab – Radio Statistics Information Section

Status Tab Item	Explanation
Text Box	Only used by Linux to display kernel level messages reported by the OS.

Chapter 6

Chapter 6: Network Settings

Using DHCP

By default the WTM1100 is configured to use dynamically assigned IP addresses issued by the network. If a DHCP server is not available on your network, you could choose to provide a viable static IP address given by the network provider.



Some vendors WiMAX networks only support DHCP to devices. In these cases, Static IP assignments will not work as expected.

Secure Network Configuration

If your WTM1100 Wireless Modem Card is going to be used on a secure network, the following MIB objects need to be set.

The following objects need to be specified to gain network entry on a secure network:

- "CfgIdentity" 8411 User Identity
- "CfgPassword" 8412 Password
- "CfgPrivateKeyPassword" 8417 Private Key Password
- "CfgAnonymousIdentity" 8422 Anonymous Identity
- "EAP Methods" 841F EAP Type: TLS or TTLS (default)

These values can be added to the device's configuration file using the WTM1100 Configuration tool as show in Figure 6-43.



Figure 6-43 Setting Secure Variables in WTM1100 Configuration Tool

Chapter 7: Troubleshooting

FDA Version

By default the WTM1000 is calibrated with the latest version of Factory Data Area (FDA). During the factory build, the FDA is written with calibration values and stored in a SEEPROM image file residing on the WTM1100 Wireless Modem Card. The FDA data is used during normal operation to serve as input to PHY control algorithms like Transmit Power Control (TPC), Automatic Gain Control (AGC) and XTAL tuning.

When new WTM1100 firmware and drivers are released, the format of the FDA data may change. If installation issues are encountered after a new WTM1100 software load is used, the FDA version may need to be updated. Contact Motorola Technical Support for assistance

Driver Installation Verification

After installation of the WTM1100 software, check to see that both WTM1100 service and WTM1100 hardware are properly installed and running.

Procedure 7-7 Driver Installation Verification

1 From the **Start** menu, select *Settings* \rightarrow *Control* **Panel** \rightarrow *Administrative* **Tools**. Double click on the *Computer Management* icon.

Figure 7-44 Control Panel – Computer Management Icon



2 The *Computer Management* window will be displayed. On the right side, expand the **Services and Applications** icon and click on the **Services** icon. Scroll down the list on the left side and verify that the "WiMAX WTM1100" service is started and running.

I File Action View Window He	elp					
← → 🗈 🖪 💣 🖗 🚱	! → ■ ■→					
Computer Management (Local)	🍇 Services					
Event Viewer	UGMAY Catamba Naturali	Name A	Description	Status	Startup Type	Log Op As
🗉 💫 Shared Folders	WIMAA Catawba Network	Shell Hardware Detection	Provides polifications for AutoPlay bardware events	Started	Automatic	Local System
🗉 🔣 Local Users and Groups	Stop the service	Smart Card	Mapages access to smart cards read by this computer. If this	Started	Macunado	Local Servic
표 🌌 Performance Logs and Alerts	Restart the service	SSDP Diccovery Service	Enables discovery of LIDER devices on your home network	Started	Manual	Local Servic
🔄 🔜 Device Manager		Symantec AntiVirus Client	Provides real-time virus scapping, reporting, and managemen	Started	Automatic	Local System
🖻 🌆 Storage	Description:	System Event Notification	Tracks system events such as Windows logon, network, and	Started	Automatic	Local System
🗄 🙀 Removable Storage	This service provides WiMAX network	System Partora Sarvica	Derforms system restore functions. To stop service, turn off	Started	Automatic	Local System
Disk Detragmenter	functions	Tack Scheduler	Enables a user to configure and schedule automated tacks on	Started	Automatic	Local System
Disk Management		TCP/ID NetBIOS Helper	Enables a user to configure and schedule automated tasks on Enables support for NetBIOS over TCD/ID (NetBT) service an	Started	Automatic	Local Service
B Services and Applications			Drovides Telephony ABI (TABI) support for programs that so	Started	Maconiado	Local Surfer
WMI Control		Sector Telephone	Enables a remote user to log on to this computer and run pro	Startou	Dicabled	Local System
Indexing Service		Terminal Services	Allows multiple users to be connected interactively to a machi	Started	Manual	Local System
		Sentemer Services	Drovider user experience theme management	Started	Automatic	Local System
		Supply and the second s	Mapages an uninterruntible power supply (LIPS) connected to	Startea	Manual	Local Servic
		Sel Iniversal Plug and Play Device Host	Provides support to bost Universal Plug and Play devices		Manual	Local Servic
		Wisual Studio 2008 Remote Debugger	Allows members of the Administrators group to remotely deb		Disabled	Local System
		Wolume Shadow Conv	Mapages and implements Volume Shadow Conies used for ba		Manual	Local System
		WebClient	Enables Windows-based programs to greate access, and mo	Started	Automatic	Local Servic
		WiMAX Catawba Network	This service provides WIMAX petwork functions	Started	Automatic	Local System
		Windows Audio	Mapages audio devices for Windows-based programs. If this	Started	Automatic	Local System
		Windows CardSpace	Securely enables the creation management, and disclosure o	Startea	Manual	Local System
		Windows Eirewall/Internet Connection Shari	Drovides petwork address translation, addressing, pame reso	Started	Automatic	Local System
		Windows Image Acquisition (WIA)	Provides image acquisition services for scanners and cameras	Started	Manual	Local System
		Windows Intege Acquisition (WIA)	Adde modifies and removes applications provided as a Wind	Started	Manual	Local System
		Windows Management Instrumentation	Provides a common interface and object model to access man	Started	Automatic	Local System
		Windows Management Instrumentation Driv	Provides systems management information to and from drivers	Started	Manual	Local System
		Windows Presentation Foundation Font Car	Optimizes performance of Windows Presentation Foundation		Manual	Local Servic
		Windows Time	Maintains date and time synchronization on all clients and ser	Started	Automatic	Local System
		Wireless Zero Configuration	Provides automatic configuration for the 802 11 adapters	Started	Automatic	Local System
		WMI Performance Adapter	Provides performance library information from WMI HiPerf pr	2001000	Manual	Local System
		Workstation	Creates and maintains client network connections to remote s	Started	Automatic	Local System
	Extended / Standard /					

Figure 7-46 Local Area Connection Properties Dialog Box



4 The *Computer Management* window will be displayed. On the right side, click on the **Device Manager** icon. Scroll down the list on the left side and verify that the "WiMAX WTM1100 NDIS" and "WiMAX WTM1100 USB" are listed and enabled under **Network Adapters**.

Figure 7-47 Windows Services Window



Motorola 4G NDIS #2 Properties
General Driver Details
Motorola 4G NDIS #2
Driver Provider: Motorola
Driver Date: 5/8/2009
Driver Version: 1.4.7.0
Digital Signer: Not digitally signed
Driver Details To view details about the driver files.
Update Driver To update the driver for this device.
Roll Back Driver If the device fails after updating the driver, roll back to the previously installed driver.
Uninstall To uninstall the driver (Advanced).
OK Cancel

Verify Network Connection Established

After installation of the WTM1100 software, check to see if the WTM1100 adapter has been assigned an IP address by the network.

Procedure 7-2 Network Connection Established Verification

1 From the **Start** menu, select *RUN* and type "**cmd**". This will open a command window.

Figure 7-49Control Panel – Computer Management Icon

Run					<u>? ×</u>								
	Type the r Internet re	ame of a pro source, and	ogram, folder, Windows will (document, or open it for you.									
Open:	cmd				-								
		ОК	Cancel	<u>B</u> rowse									
From th	Command	Window, t	ype " ipconfi g	g". Verify that	t the WiM	AX	netw	ork	has g	iven	the V	VTM	1100
From th Wireless	e <i>Command</i> Modem Ca	<i>Window</i> , ty rd an IP ad	ype " ipconfi g dress.	g". Verify tha	it the WiM	AX	netw	ork	has g	given	the V	WTM	1100
From th Wireless	e <i>Command</i> Modem Ca 7-50	<i>Window</i> , ty rd an IP ad	ype " ipconfi g dress. 6 Window	g". Verify tha	nt the WiM	AX	netw	ork	has g	given	the V	WTM	1100
From th Wireless Figure	e <i>Command</i> Modem Ca 7-50	Window, t <u>u</u> rd an IP ad PCONFIG	ype " ipconfiş dress. 5 Window	g". Verify tha	it the WiM	AX	netw	ork	has g	given	the V	WTM	1100
From th Wireles: Figure	e <i>Command</i> Modem Ca 7-50 ^{Y5\system32\cmd Windows XP [U gint 1985-2001}	Window, ty rd an IP ad PCONFIC PRE PSion 5.1.26 Microsoft Co	ype " ipconfi g dress. B Window	g". Verify tha	at the WiM	AX	netw	ork	has g	iven	the V	WTM	1100
From th Wireles: Figure	e Command Modem Ca 7-50 W5\system32\cmd Windows XP [U ght 1985-2001 ts and Settin	Window, ty rd an IP ad PCONFIC PRE PRE 10 5.1.26 Microsoft Co	ype " ipconfiş dress. 6 Window 801 892 900	g". Verify tha	at the WiM	AX	netw	ork	has g	iven	the V	WTM	1100
From th Wireless Figure	Command Modem Ca 7-50 Windows XP (U Windows XP (U Windows XP (U Sint 1985-2001 ts and Settin Configuratio	Window, t rd an IP ad PCONFIC PRE PRE 126 Microsoft Co IS\motorola>i	ype " ipconfi dress. 3 Window 901 ep. pconfig	g". Verify tha	the WiM	AX	netw	ork	has g	iven	the V	WTM	1100
From th Wireless Figure GT CAWIND Microsoft (C) Copyr C:\Docume Windows I Ethernet	e Command Modem Ca 7-50 Windows XP (U ight 1985-2001 Ats and Settin Configuratio	Window, t rd an IP ad PCONFIC PREONFIC SNROTOFIC SNROTOFIC	ype " ipconfi dress. 6 Window 901 pronfig	g". Verify tha	the WiM	AX	netw	ork	has g	tiven	the V	WTM	1100
From th Wireless Figure G C:\WIND Microsoft (C) Copyr C:\Docume Windows I Ethernet	e Command Modem Ca 7-50 W5\system32\cmd Windows XP (U ight 1985-2001 its and Settin Configuratio dapter Local dia State	Window, t rd an IP ad PCONFIC Presion 5.1.26 Microsoft Co gs\motorola>i	ype " ipconfi dress. 6 Window 991 ppconfig pn 5: : Media d	g". Verify tha	ut the WiM	AX	aetw	ork	has g	tiven	the V	WTM	1100
From th Wireless Figure GC CANING Microsoft (C) Copyr C:\Docume Windows I Ethernet	e Command Modem Ca 7-50 V5\system32\cmd Windows XP UU ight 1985-2001 its and Settin Configuratio dapter Local dia State	Window, tr rd an IP ad PCONFIC Presion 5.1.26 Microsoft Co gs motorola>i Prea Connecti	ype " ipconfi dress. 6 Window 6 Window 901 9 9 9 9 9 9 9 9 9 9	g". Verify tha	ut the WiM	AX	netw	ork	has g	iven	the V	WTM	1100
From th Wireles Figure Microsoft (C) Copyl C:\Docume Windows I Ethernet Ethernet	e Command Modem Ca 7-50 W5\system32\cmd Windows XP [U ght 1985-2001 nts and Settin Configuratio dapter Local dapter Local annection-spec Address henet Mask	Window, ty rd an IP ad PCONFIC Protocola symptotorola hrea Connecti fic DNS Suff	ype " ipconfi dress. Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Window Wi	g". Verify tha isconnected max.stt.com .1.121 .255.0 .1.1	the WiM	AX	aetw	ork	has g	iven	the V	VTM	1100
From th Wireles Figure GC CAWIND Microsoft (C) Copyr C:\Docume Windows I Ethernet C:\Docume	e Command Modem C: 7-50 W5\system32\cmd Windows XP UU ight 1985-2001 hts and Settin P Configuratio configuratio dapter Local adapter Local adapter Local adapter Local shaet Mask fault Gateway its and Settin	Window, t rd an IP ad PCONFIC PREONFIC Preion 5.1.26 Microsoft Co gs\motorola>i hrea Connecti ific DNS Suff 	ype "ipconfig dress. Window Window Window 901 rep. pconfig pconfig on 5: : Media d on 6: ix : cops wi : 192.168	g". Verify tha isconnected max.stt.com 1.121 .255.0 1.1	the WiM	AX	netw	ork	has g	iven	the V	WTM	1100

Verify PEM files mapping to Specific Names

When using third party Privacy-enhanced Electronic Mail (PEM) files, rename them to match the file names the WTM1100 driver is looking for in WTM1100 installation directory (default is C:\Program Files\Motorola\WTM1100 directory).

WTM1100 PEM File Names:

- Commercial_device.pem --> ServerCert.pem
- Commercial_prv_key.pem --> ServerPrivateKey.pem
- EMEA_Trials_ServerRootCert.der --> TrustCA.pem

Authentication Settings

To use Tunneled Transport Layer Security (TTLS) authentication protocols several certificates may be required depending on the network infrastructure settings.

For WTM1100 TTLS authentication:

- The ServerCert and ServerPrivateKey certificates may not be required by the WTM1100.
- The TrustCA is required to verify a AAA server certificate.

On the Network Infrastructure Side:

In the Motorola NECB.xml file, grep for "CapCfg" and the value 2 (auth on) should change to 0 (auth off).



There are separate lines in the NECB for the CapcAuth and for the MAC message integrity checking per sector, both need to be changed when authentication is disabled.

Authentication off:

<SWI:wmanIfBsCapCfgAuthPolicyControl>0000000</SWI:wmanIfBsCapCfgAuthPolicyControl>

• <SWF:wmanIfBsCapCfgMacMsgAuth>0</SWF:wmanIfBsCapCfgMacMsgAuth>

Authentication on:

- <SWI:wmanIfBsCapCfgAuthPolicyControl>0000002</SWI:wmanIfBsCapCfgAuthPolicyControl>
- $\bullet \qquad <\!\! SWF: wmanIfBsCapCfgMacMsgAuth\!>\! 9\!<\!\!/ SWF: wmanIfBsCapCfgMacMsgAuth\!>\!$

From an EMS, DAP/Configuration/SubscriberRestrictions Settings:

- Auth Policy = NONE (or EAP for auth)
- MAC Message ... = NONE (or CMAC0_AND_CMAC for auth)

Chapter 8: Customer Information

This chapter lists the relevant Certification and Product Safety Information for the WTM1100 devices described in this manual.

Customer Service Information

If you have read this document and made every effort to resolve installation or operation issues yourself and still require help, please contact Motorola Global Support Center (GSC) using the following contact information:

Hours of Operation

8AM to 5PM M-F Central US

Technical Support:512-427-7256 (USA)Website:http://www.motorola.com/

Obtaining Support

Motorola provides technical support services for your system and recommends that you coordinate warranty and repair activities through the Motorola Global Support Center. When you consult the Motorola GSC, you increase the likelihood that problems are rectified in a timely fashion and that warranty requirements are satisfied. Check your contract for specific warranty and service information.

System Information

To be provided with the best possible opportunity for support, collect the following system information and have it available when obtaining support.

• Location of the system

- Date the system was put into service
- Software or firmware version information for components of your system
- Serial number(s) of the device(s) or component(s) requiring support
- A written description of the symptom or observation of the problem:
 - When did it first appear?
 - Can it be reproduced?
 - What is the step-by-step procedure to cause it?
- Do other circumstances contribute to the problem? For example, changes in weather or other conditions?
- Maintenance action preceding problem:
 - Upgrade of software or equipment
 - Change in the hardware or software configuration
 - Software reload from backup or from CD-ROM (note the version and date)

Return Material Request

After collecting system information, contact the Motorola Global Support Center for assistance or to obtain a Return Material Authorization (RMA) number for faulty Field Replaceable Entities (FREs):

North America: 512-427-7256 (USA)

Returning System Components to Motorola

Motorola's service philosophy is based on field replaceable entities (FREs). FREs are system components identified by Motorola to be returned to Motorola for repair. In turn, Motorola sends you a replacement FRE component to help you maintain maximum operating performance for your system.

Returning FREs

Return faulty FREs to Motorola for repair. When you return an assembly for service, follow these best practices:

- Place any assembly containing CMOS devices in a static-proof bag or container for shipment.
- Obtain a return authorization (RA) number from the Motorola System Support Center.
- Include the warranty, model, kit numbers, and serial numbers on the job ticket, as necessary.
- If the warranty is out of date, you must have a purchase order.
- Print the return address clearly, in block letters.
- Provide a phone number where your repair technician can be reached.
- Include the contact person's name for return.

• Pack the assembly tightly and securely, preferably in its original shipping container.

Antenna Installation

The "main" antenna installation must provide a minimum separation distance of 20 cm from users and nearby persons and must not be co-located or operating in conjunction with any other antenna or transmitter. The combined cable loss and antenna gain must not exceed +9.9 dBi and total system output must not exceed 2.0W EIRP in the 2501 - 2687.5 MHz band in order to comply with the FCC EIRP limit. OEM installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance. For system integrations requiring higher antenna gain, or a "main" antenna position closer than 20cm from the body, SAR compliance testing of the completed product will be required. It is strongly recommended that the system integrator seeks the advice of a suitably accredited test laboratory to develop a test plan and carry out necessary testing.

Chapter 9: Certification and Safety Information

This chapter lists the relevant FCC Certification and Product Safety Information for the WTM1100 devices described in this manual.

FCC and CE Regulatory Information

FCC and CE Information

For 2.5GHz operation, the WTM1100 device complies with Part 27, of the FCC Rules. For 3.5GHz operation, the WTM1100 device complies with CE (EN302 326-2, EN301 489-4). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This device is to be used only for mobile and fixed applications. Users and installer must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance. This device is approved as a module to be installed in other devices.

Safety Information for the WTM1100 Product

The Federal Communications Commission (FCC) with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. Motorola WTM1100 products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1, 1991. Proper operation of this radio according to the instructions found in this manual and the hardware and software guides on the WTM1100 CD will result in user exposure that is substantially below the FCC recommended limits.

- Do not touch or move the antenna(s) while the unit is transmitting or receiving.
- Do not hold any component containing a radio such that the antenna is very close to or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; otherwise, the radio may be damaged.

General Safety Information

- Do not allow children to play with the WTM1100 device.
- Do not use cellular devices while driving a vehicle.
- Do not use the WTM1100 in health care facilities.
- Do not use the WTM1100 in the air aboard an aircraft.
- Do not use the WTM1100 in "blasting area" zones.
- Do not use the WTM1100 in potentially explosive atmospheres.

Safety Certification

- 2.5GHz WTM1100 complies with UL 60950
- 3.5GHz WTM1100 complies with CE EN 60950

FCC Notice to Users

The following statement applies to all products that have received FCC approval. Applicable products bear the FCC logo, and/or an FCC ID in the format FCC-ID:xxxxxx on the product label.

Motorola has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment. See 47 CFR Sec. 15.21.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See 47 CFR Sec. 15.19(3).

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WTM1100 Product Label Example



Glossary

FDA – Factory Data Area

HMC – Half Mini-PCIe Card

FWMT – Future Wireless Modem Technologies

PEM – Privacy-enhanced Electronic Mail

SBC – Single Board Computer

SD – Subscriber Device, a general description to a device type that is usually a WMC or a laptop device.

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WMC - Wireless Modem Card, can apply to any model number