

USER MANUAL



, USA

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TABLE OF CONTENTS

| | |
|---|-----------|
| Table of Contents | i |
| Introduction | 1 |
| About this Product | 1 |
| System Overview | 3 |
| Package Contents | 4 |
| System Specifications | 5 |
| | |
| Getting Started | 6 |
| Top Panel | 6 |
| Quick Setup | 7 |
| | |
| Detailed Setup | 8 |
| Turning on the MCS100 | 8 |
| BGAN Antenna Setup | 12 |
| 3G/4G Mobile Broadband Router Setup | 17 |
| WiFi Connectivity | 19 |
| WiFi Phone Connectivity | 20 |
| | |
| Glossary | 23 |



INTRODUCTION

❖ ABOUT THIS PRODUCT

The VisionComms MCS100 provides remote, resilient and secure unified phone connectivity and Internet access where communication access is unavailable or infrastructures have failed or collapsed.

The system offers you the following features or benefits:

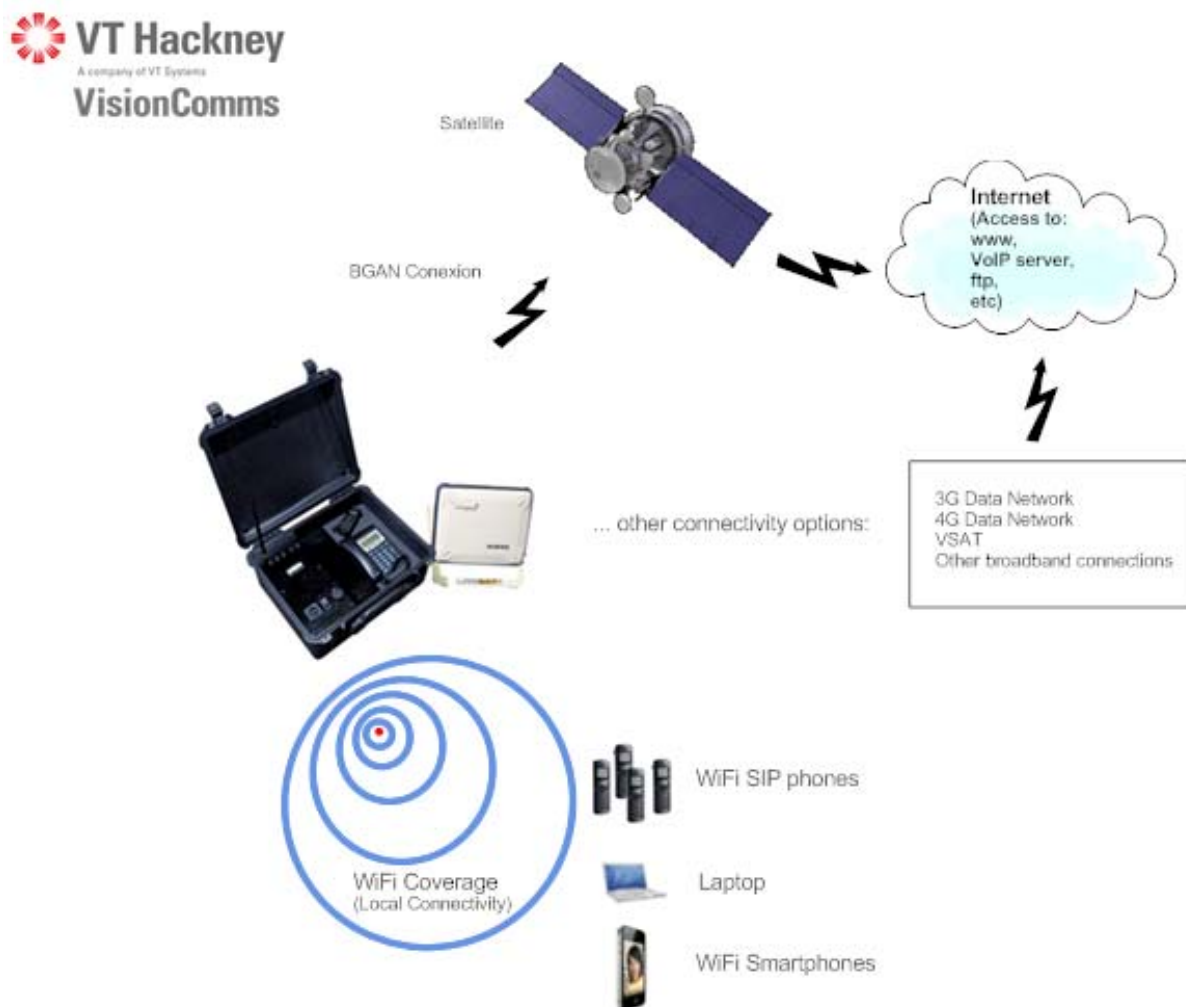
- Integral PBX VoIP server capable of handling up to 30 simultaneous in-network calls
 - Manual or auto-attendant answering
 - Conference bridging
 - Manual or automatic call attendant
 - Caller ID
 - Voicemail
 - Easy to use Graphical User Interface (GUI) to add/edit extensions
 - Call Forward
 - Call Transfer
 - Codecs: G.711 (A-law and μ law), G.722, G.726, G.729, GSM, iLBC, Speex and LPC-10
- Dual WAN port connectivity for BGAN, VSAT, 3G data networks, 4G data networks or other broadband connections
- One button system activation
- Man-portable ruggedized and waterproof carrying case
- BGAN Satellite terminal – Hughes HNS 9201
 - Up to 492 Kbps data (transmit and receive)
 - Multi-user capability for sharing a single unit
 - Selectable Quality-of-Service (QoS)
 - FCC, CE and GMPCS Certified

- Local and/or toll free phone number
- Desk phone – VoIP SIP compliant
- WiFi handheld SIP phones
- 802.11 b/g WiFi access point/hotspot – password secured
- System power includes:
 - 12 VDC connection to any external battery source
 - 120VAC power adapter to connect to any external power source
 - DC to AC Power Inverter for powering BGAN antenna

❖ SYSTEM OVERVIEW

The system is easy to setup and connects in minutes. The system provides a dedicated telephone number that is accessible by anyone, from anywhere in the world. A built-in PBX server permits the incident commander to transfer phone calls to any WiFi enabled portable phone within the established network. Portable phones can communicate between each other inside the local network simply by dialing the extension numbers.

Access the Internet through any WiFi enabled PDA/smartphone or laptop and transmit email, data, photos and even video. Expand the area coverage with optional tripod mounted network nodes that can be equipped with an observation camera.



❖ PACKAGE CONTENTS

The following components will be included in the MCS100 package:

- One (1) Ruggedized and waterproof carrying case
- One (1) MCS100 unit
- One (1) SIP complaint VoIP desk phone
- Four (4) WiFi SIP phones
- Four (4) 5 VDC power adapters (WiFi phones chargers)
- One (1) Hughes HNS-9201 antenna
 - One (1) Rechargeable lithium ion battery pack
 - One (1) 19 VDC, 3.16 A Power adapter (BGAN power adapter)
 - One (1) Travel adaptor
 - One (1) USB cable
 - One (1) Ethernet cable
 - One (1) SIM card (requires BGAN data service)
- One (1) 7 dBiWiFiomnidirectional antenna
- One (1) 10ft Power cable (cigarette lighter to 2-pin pole connector)
- One (1) 12 VDC, 12.5 A Power adapter (MCS100 power adapter)
- One (1) 100 Watts DC to AC power inverter
- One (1) 12-Volt socket with battery clips
- One (1) CTR350 (3G) or PHS300 (3G/4G) Mobile broadband power adapter
- One (1) Ethernet Cable

❖ SYSTEM SPECIFICATIONS

Model #: MCS100

Enclosure: Watertight, crushproof, and dust proof carrying case with integrated handle

CPU: Core iX processor

Wireless: 350 mW 802.11 a/b/g mini-PCI card

Wi-Fi antenna: 7 dBi dual band omnidirectional antenna with RP-SMA connector

Security:

- Authentication: 802.11i (WPA, WPA2), 802.1x
- Encryption: Open WEP-64/128/, TKIP, AES

LED indicators: LEDs associated with each LAN and WAN port indicate port activity

Controls/Connectors:

- On/Off switch
- 12 VDC Cigarette lighter socket
- LAN ports
- WAN ports

DC Input power: 6 to 30 VDC wide input

DC Output power: 12 VDC

Dimensions: 20.62" x 16.87" x 8.12"

Weight: 22 lbs

Operating Temperature:

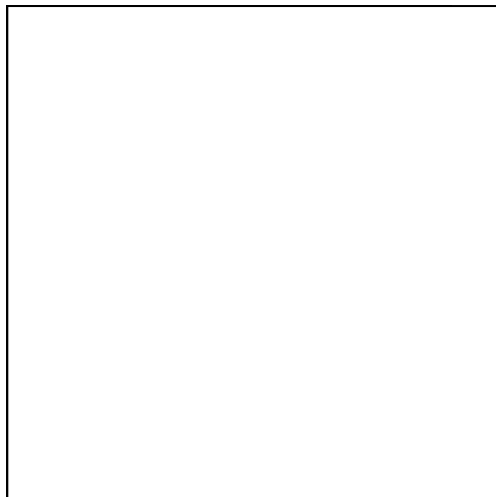
Storage Temperature: -30 to 140 °F



GETTING STARTED

This guide is the simplest way to learn the MCS100 setup and operation. If you are a first time user, you will be guided through the procedure for powering up the unit, setting up the BGAN antenna, wireless phones configuration, and adding/deleting extensions.

❖ TOP PANEL



❖ QUICK SETUP

There are five basic steps to setup the MCS100:

1. Open the carrying case
2. Connect to power source
3. Press the ON/OFF switch once. The system will take approximately 1 ½ to 2 minutes to boot up
4. Turn on the WiFi SIP phones. The wireless phones are preconfigured to register automatically with the MCS100
5. Connect the Internet cable coming from the BGAN antenna or 3G mobile broadband router to one of the WAN ports (WAN1 or WAN2)

For more information about the MCS100 setup go to the ***Detailed Setup*** section on page 8



DETAILED SETUP

❖ TURNING ON THE MCS100

There is nothing complicated about this system. Merely open the lid, connect to a 12 VDC power source, setup the BGAN antenna, push a button and you are up and running.

To setup the MCS you must:

1. Open the carrying case
2. Plug the input power cable into the 12 VDC input connector. There are several power cables that can be used to power the MCS100:

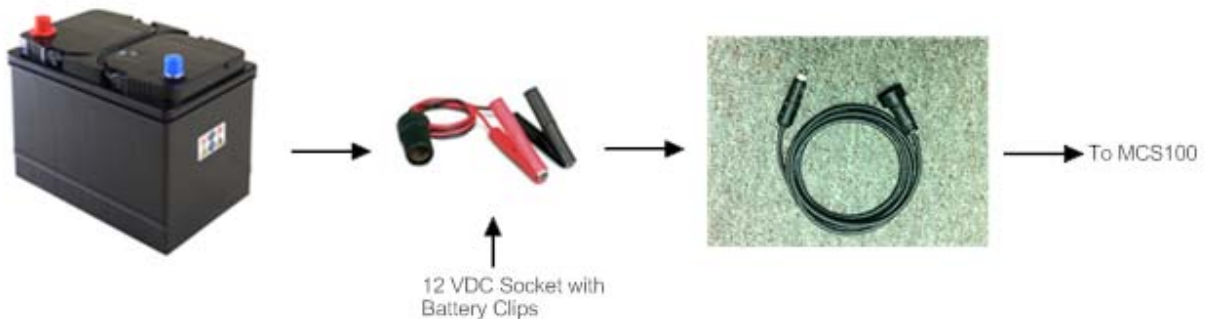
- a. AC to DC power adapter -120 VAC to 12 VDC- (included):



b. Cigarette lighter to 2-pin connector 12 VDC Power Cable (included):

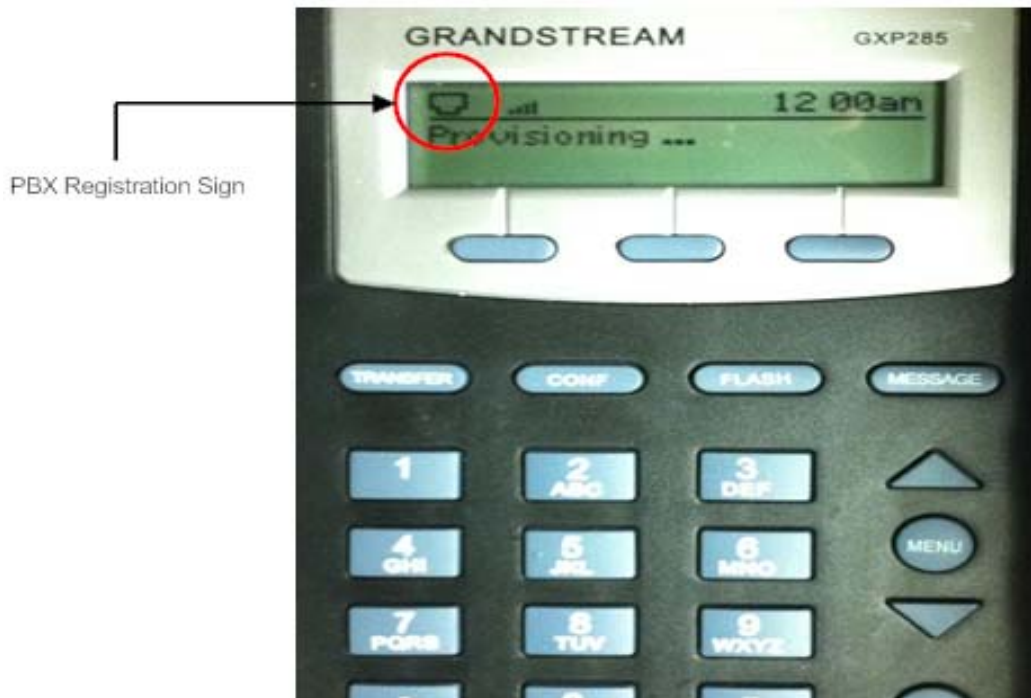


a. 12 VDC Socket with battery clips (included):

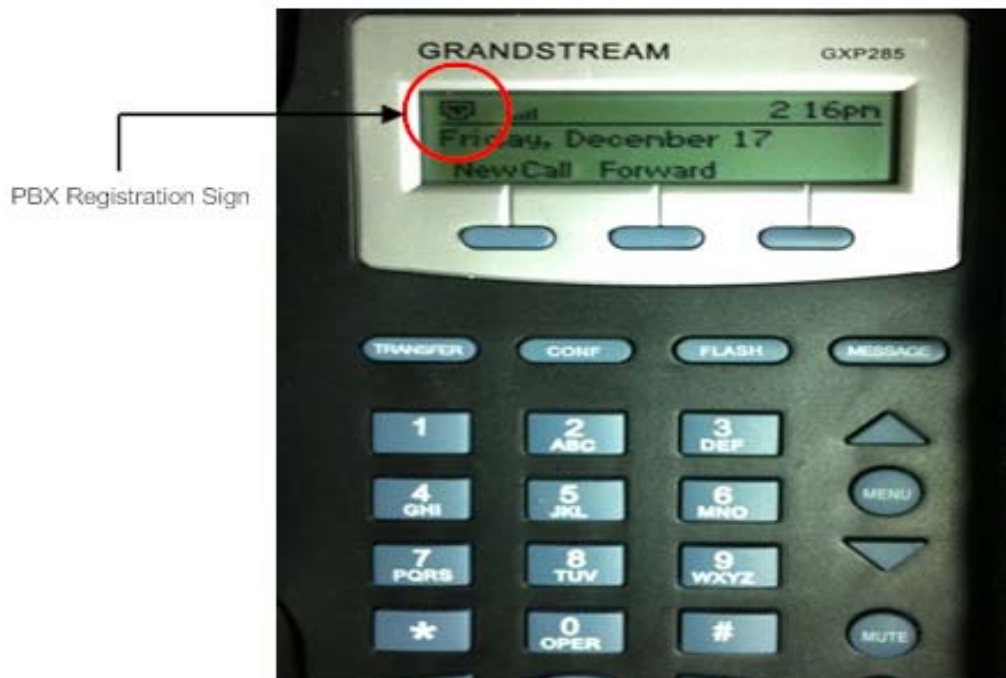


3. Press the ON/OFF Switch once. The system will take approximately 1 ½ to 2 minutes to boot up. Ready status acknowledged when deskphone LED display screen appears as shown in 3b.

- a. The PBX registration sign is clear while the MCS100 is booting up and the phone has not yet registered with the PBX server:



- b. The PBX registration sign is dark when the MCS100 finished booting up and the phone has registered with the PBX server:



4. Turn on the WiFi SIP phones. The wireless phones are preconfigured to register automatically with the MCS100. The picture below shows the wireless phone's screen when the phone is registered with the PBX server:



Note: If a WiFi phone does not register with the PBX server nor does get a WiFi signal go to the **WiFi phone connectivity section** on page 19

Note: At this point, the MCS100 is ready to make internal phone calls from one extension to another extension. An internal phone call is defined as a phone call among two or more devices registered to the PBX server within the WiFi local wireless network. The MCS100 needs to be connected to the Internet for full functionality to outside phones.

5. Connect the Internet cable coming from the BGAN antenna or 3G mobile broadband router to one of the WAN ports (WAN1 or WAN2). Wait one to two minutes for the MCS100 to register to the service provider. Now the MCS100 is fully functional for accessing the Internet to provide telephone and data access to the outside world.

Note: For more information about the BGAN antenna setup go to the **BGAN antenna setup section** on page 12. For 3G mobile broadband router setup go to the **3G/4G mobile broadband setup section** on page 17

❖ BGAN ANTENNA SETUP

There are four easy steps for the Hughes 9201 BGAN antenna setup:

- a. Obtaining GPS Information
- b. Pointing the Antenna
- c. Registering with the Network
- d. Connect the Ethernet cable to the MCS100

These four steps will be explained below in greater detail, however, for more information about the BGAN antenna refer to the ***Hughes 9201 Users Guide***

1. **Obtaining GPS Information.** GPS coordinates are required to register the Hughes 9201 antenna with the BGAN system. Here are the steps to acquire the GPS information required:

- a. Lay the antenna down flat. Verify that the unit has an open view of the sky to get the GPS information
- b. Turn on the antenna
- c. The GPS LED will start to flash green indicating the antenna is obtaining the GPS coordinates
- d. Check the antenna's GPS LED for the status of the GPS coordinates. It may take a few minutes to get the coordinates. Once the antenna gets a GPS coordinates, the GPS LED will turn solid green



e. Checking the GPS status:

| Antenna GPS indicator light | Status |
|-----------------------------|--|
| Flashing Green | The antenna is getting the GPS coordinates after being powered up |
| Solid Green | The antenna has obtained the GPS coordinates. You are ready to proceed to point the antenna |
| Flashing Red | The BGAN network will not allow you to register with the stored GPS coordinates. Restart the antenna and get the GPS coordinates again |
| Solid Red | The GPS receiver in the antenna is faulty. Contact the service provider |
| Off | The antenna has successfully registered with the BGAN system |

2. **Pointing the Antenna.** Once the antenna obtains the GPS coordinates you will need to point the antenna to get a strong signal from the satellite. Be sure the antenna has an unobstructed path to the sky.
- Place the antenna on a flat surface. Find the knobs located on one side of the antenna. Loosen the knobs by rotating them both towards the antenna
 - Lift the antenna. To lift the antenna, place a finger in the lower right hand corner of the unit and place your other hand in the middle of the unit



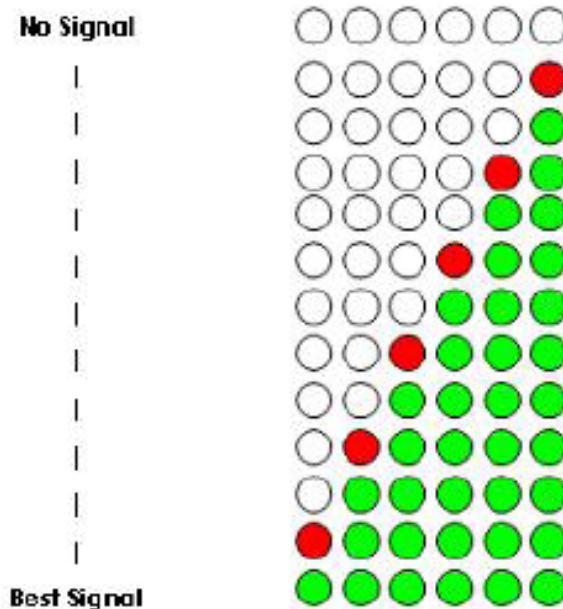
- c. Pull out the front stabilizer



- d. After you have positioned the antenna at the desired angle, tighten the knobs by turning them away from the unit
- e. Use the BGAN antenna signal quality LEDs to point the antenna in the direction that the antenna receives a strong signal from the satellite. To point the antenna using the LEDs:
 - i. Check the pointing indicator LEDs as you point the antenna to obtain the maximum possible signal strength



- ii. The following image shows the colors of the pointing LEDs from the weakest to strongest, as you point the terminal to the BGAN satellite



You can also monitor the signal quality using the audio buzzer.

- a. Press the audio button to turn the audio buzzer on



- b. Monitor the signal quality using the buzzer. The higher the pinch and the shorter the intervals between tones, the stronger the signal.
 - f. When you have finished pointing the terminal, you are ready to register with the network
3. **Registering with the Network.** When you have successfully pointed the antenna, you then need to register with the network
 - a. Press the “Audio Buzzer” button on the antenna for 3-4 seconds
 - b. Once the GPS light goes out, the antenna is registered with the network
 - c. When you registered to the network the buzzer turns off automatically
 - d. If the audio button is pressed when the antenna is not in pointing mode, it will have no effect
4. **Connect the Ethernet cable to the MCS100.** Once the antenna has registered with the network connect the network cable (Ethernet cable) from the antenna to one of the MCS100’s WAN ports. The antenna has three different interfaces: USB, Ethernet and ISDN



1. Connecting by Ethernet

- i. Connect the supplied Ethernet cable to one of the MCS100's WAN ports, and insert the other end to the connector into the BGAN antenna's Ethernet port (Important: the BGAN antennas has three different ports, make sure to connect to the Ethernet cable to the Ethernet port –center-)



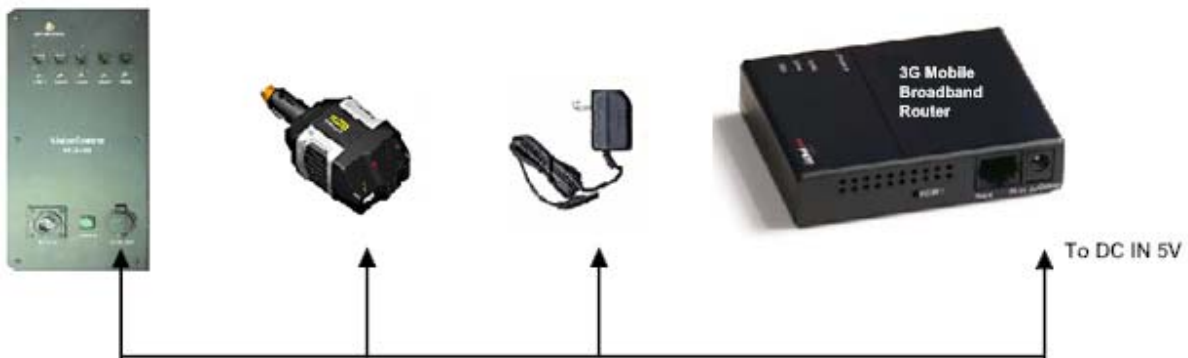
- ii. At the antenna, slide the cable through the rubber door slot in order to secure and protect the connection



❖ 3G/4G MOBILE BROADBAND ROUTER SETUP (Optional)

The MCS100 system includes a 3G/4G mobile broadband router that allows easy 3G/4G data connectivity. When using the 3G/4G mobile broadband router make sure to disconnect the BGAN antenna's Ethernet cable from the MCS100's WAN ports to ensure the MCS100 is using the 3G/4G network as a backbone instead of the BGAN system. 3G/4G Mobile Broadband Router setup:

1. Power up the 3G/4G Mobile Broadband Router. The MCS100 system includes a power adapter to power the 3G/4G Mobile Broadband Router. You can use the DC-AC power inverter and the power adapter to power the 3G/4G Mobile Broadband Router



2. Connect your 3G or 4G USB aircard from your service provider to the 3G Mobile Broadband Router



3. Wait 1-2 minutes for the 3G USB modem to connect to the 3G network. The USB LED light on the Mobile Broadband Router will turn solid green when the modem registered and is ready to be used



Note: If the USB LED light on the Mobile Broadband Router does not turn on after connecting the 3G aircard modem, unplug the 3G aircard modem, plug it back and wait a couple of minutes until the USB LED light turns solid green.

4. Connect the 3G Mobile Broadband Router to one of the WAN ports on the MCS100. The WAN LED light on the 3G Mobile Broadband Modem will turn on.



❖ WiFi Connectivity

The MCS100 includes a WiFi access point to provide WiFi connectivity to WiFi SIP phones, laptops, smartphones and any WiFi enable device. The MCS100's WiFi network is preconfigured with the following credentials:

SSID: MCS_100

Password: vision01 (or customer selected password)

Note: The SSID and password can be configured depending on the user's preferences

❖ WiFIPHONE CONNECTIVITY

The WiFi SIP phones included in the MCS100 system are preconfigured to automatically connect and register to the PBX server when the phones are turned on. However, this section shows the steps required to connect the WiFi SIP phones with the MCS100 if the phone did not connect automatically.

There are two steps required to connect a WiFi SIP phone to connect to the MCS100:

1. WiFiconnectivity
2. PBX server registration

The wireless phones are preconfigured to automatically connect and register with the MCS100. However, if the phone was turned on and did not connect to the WiFi network (e.g. the phone displays “Network Down”); follow steps 1 and 2. If the phone connected to the WiFi network but did not register with the PBX server go to step 2.

1. **WiFi connectivity.** The first step to connect a WiFi SIP phone to the MCS100 is to connect to the MCS100’s WiFi network

- a. Turn on the wireless phone



- b. Click on Menu -> AP find.
- c. Select the MCS_100 network (*default SSID*) or the name of the network that the MCS100 is broadcasting
- d. Select the wireless security protocol. The default security protocol is WPA Passphrase
- e. Enter the wireless password (*default password vision01*). Make sure to enter all small letters.
- f. The wireless phone will ask you if you want to make this the default connection. Press Yes
- g. The wireless phone will connect to the MCS100's WiFi network.



2. **PBX Server Registration.** Now that the wireless phone has connected to the MCS100's wireless network the phone must register with the PBX server. Once the wireless phone connects to the MCS100's WiFi network, the phone will automatically try to register with the PBX server. If the phone did not register with the PBX server try to turn off the phone, wait about five seconds and turn it back on. If the phone did not register try the following steps:

- a. Press Menu
- b. Scroll down until you find Select Profile. Press Select Profile
- c. Select PBX
- d. The phone will register with the PBX server



- e. The phone is ready to be used

When all else fails, call the support center for assistance

Phone: (252) 946-6521

B-GAN: Broadband Global Area Network- it's a small satellite dish. When connected it gives the customer voice, video and data transmittal capability.

Codec(Compressor-Decompressor): A codec encodes a data stream or signal for transmission, storage or encryption, or decodes it for playback or editing. Codecs are used in videoconferencing, streaming media and video editing applications.

GUI: Graphical User Interface

LAN: Local Area Network

MCS100: Man-Portable Communications System

PBX: Private Branch Exchange- a private telephone network with a company. The users of the PBX phone system share a number of outside lines for making calls

QoS: Quality of Service. Quality of service is the ability to provide different priority to different applications, users, or data flows, or to guarantee a certain level of performance to a data flow

SIM: Subscriber Identity Module

SIP: Session Initiation Protocol - a standard to make a voice call over the Internet

USB: Universal Serial Bus (USB) is a specification to establish communication between devices and a host controller (usually a personal computer)

VAC: Volts – Alternating – Current

VDC:Volts – Direct - Current

VSAT: Very Small Aperture Terminal- a VSAT is a small size telecommunications earth station that transmits and receives Voice, Video and Data via a satellite

VoIP: Voice over Internet Provider or over the internet

WAN: Wide Area Network. Is a computer network that covers a broad area

WAN port: Ethernet port used to connect an Internet enable device