



iSpectrum ISUG-01

User Manual

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Revision History

Date	Author	Version	Description
09/25/12	Peter Son	1.0.0	Initial

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1. ABOUT THIS GUIDE

This purpose of this document is to explain installation, setup and operation of the *ISUG-01* by SYM Technology. It is intended to provide all necessary information and guidance to use the system.

The installation guidelines are of a general nature due to the wide variety of installation-specific requirements within individual base stations. SYM Technology prides itself on ensuring that installation is successful. Please contact SYM Technology directly if additional installation information is required (see section 1.4 for contact information).

1.1. WHO SHOULD USE THIS GUIDE?

This guide is intended for use by trained telecommunication professionals responsible for base transceiver station (BTS)/Distributed Antenna Systems (DAS) performance, including:

RF Performance Engineers

Operations Engineers

BTS Site Technicians

SYM Technology assumes installation personnel will have understanding of RF engineering principles and typical BTS site architecture.

It is the operator's responsibility to ensure that this equipment is properly installed and operated within SYM Technology operating specifications to obtain proper performance of the ISUG-01 and to comply with regulatory requirements.



Warning: Failure to follow the installation and configuration recommendations contained herein may result in service interruptions and/or damage to the unit.



Warning: This equipment may be installed in close proximity to cables, connectors, or components carrying high RF power. Installation and operation must be completed by qualified personnel.

2. GENERAL

2.1. WARNING, CAUTIONS, AND SAFETY

There are several simple guidelines to operating the ISUG-01 properly and safely.

- Avoid exposing the ISUG-01 to extreme temperatures, either hot or cold. The ISUG-01 is for indoor use only.
- Keep the unit in a clean, well-ventilated and dust-free place.
- Avoid exposing the ISUG-01 to rain or liquid spills. If the ISUG-01 gets wet, immediately turn off the power and dry the unit completely.
- Use only the power supply adapter that comes with the unit. Replacement power supply adapters may be ordered from SYM Technology.
- Treat the ISUG-01 with care. Avoid dropping, throwing, or sitting on it. Rough treatment may damage the unit and void the warranty.
- Do not attempt to disassemble your unit. If the warranty seal has been broken, the warranty is no longer valid.
- Any changes or modifications to your unit not expressly approved in this document could void your warranty.

2.2. HUMAN EXPOSURE TO RF RADIATION

This system complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This system may not cause harmful interference
- (2) This system must accept any interference received, including interference that may cause undesirable operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This system has been tested and found to comply with the limits for a Class B digital device, pursuant to the FCC Rules.

2.3. MANUFACTURER'S LIMITED WARRANTY

SYM Technology, Inc. ("SYM") offers a limited warranty that the enclosed unit ("Product") will be free from defects in material or workmanship as follows:

ONE (1) YEAR LIMITED WARRANTY: For a period of one (1) year from the date of original purchase, SYM will, at its option, either repair or replace a defective Product (with new or rebuilt parts/replacement).

LIMITED WARRANTY ON REPAIRED/REPLACED PRODUCTS: After SYM repairs or replaces the Product, the repaired or replaced Product shall be covered by warranty for the remaining time of the original warranty period or for ninety (90) days from the date of repair, whichever is longer. Repair or replacement may include the use of functionally equivalent reconditioned units. Replaced faulty parts or components will become the property of SYM Technology.

This limited warranty does not cover and is void with respect to the following: (i) Products which have been improperly installed, maintained, modified, or repaired; (ii) Products which have been subject to outdoor use, misuse, physical damage, abnormal use or operation, improper handling or storage, exposure to fire, water, excessive moisture or extreme temperature; (iii) Products operated outside published maximum ratings; (iv) Products on which warranty seals or Product serial numbers have been removed, broken, or altered; (v) cost of installation, set up, removal or reinstallation; (vi) signal reception problems or network problems (unless caused by defect in material or workmanship); (vii) damage as a result of fire, flood, power surge, lightening, acts of God or other acts which are not the fault of SYM and which the Product is not specified to tolerate; (viii) any Products which have been opened, modified, or repaired by anyone other than SYM or a SYM authorized service center.

REPAIR OR REPLACEMENT, AS HEREINABOVE PROVIDED, IS YOUR SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THE LIMITED WARRANTY. SYM SHALL HAVE NO LIABILITY FOR ANY INCIDENTAL OR CONESQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF SALES, OR LOSS OF USE OF THE PRODUCT. SYM MAKES NO OTHER EXPRESS WARRANTY, EITHER WRITTEN OR ORAL, WITH RESPECT TO THE PRODUCTS. THE DURATION OF IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS LIMITED TO THE DURATION OF THIS EXPRESS WARRANTY.

SYM Technology, Inc.

Attention: Customer Service

Phone: (626) 394-6630

Email: support@symtechnology.com

3. PRODUCT OVERVIEW

3.1. INTRODUCTION

The ISUG-01 is an RF uplink spectrum analyzer that enables users to consistently monitor and analyze uplink noise and RF signals. With the increase in wireless data usage, the network is experiencing a rise in uplink noise levels, ultimately leading to the noise floor quickly nearing or at alarm levels. The ISUG-01 eliminates the need to wait in order to diagnose spectrum health.

The ISUG-01 is designed to perform regular analysis of the RF uplink spectrum health. The system is capable of wideband analysis from 700 MHz to 2.7 GHz. Bands can be customized for multiple carriers or to suit the needs of one mobile service provider without any software or hardware modifications.

Users have 24/7 access to the system once it is properly installed. Multiple personnel can access the real-time RF uplink waveform simply by using an Internet connection to log onto the Web-based guided user interface (GUI). Users can view channel power, port status, modify configuration settings and set alarm threshold levels.

The ISUG-01 sends out SNMP based alarm notifications. The ISUG-01 can support SNMP polling. The system generates two types of alarms: power and spurious alarms. These alarms can be set by users via upper and lower threshold limits. Users can choose to set these threshold values for early detection of noise floor rise or for alarming status. The ability to consistently view the spectrum enables users to take a proactive approach to diagnosing the uplink spectrum and maintaining overall spectrum health.

The ISUG-01 was designed to give users a proactive tool for analyzing the RF uplink spectrum. Once properly installed, the ISUG-01 will undoubtedly improve maintenance and troubleshooting procedures before or during an alarm.

All information necessary to properly use the ISUG-01 will be described in the following chapters. The steps required to install and configure this system will be described in detail, however if information or assistance is required, please contact:

SYM Technology, Inc.

Technical Support: support@symtechnology.com

Live Support: (626) 394-6630.

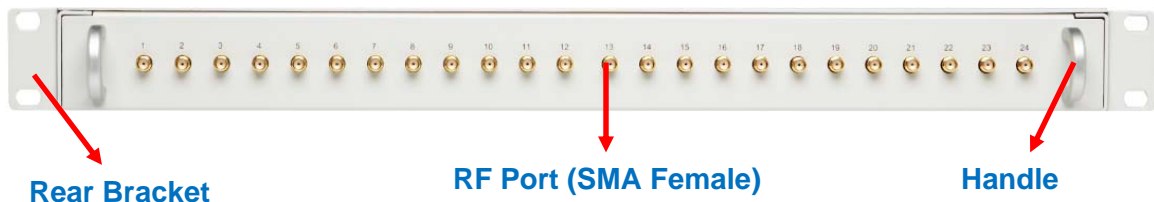
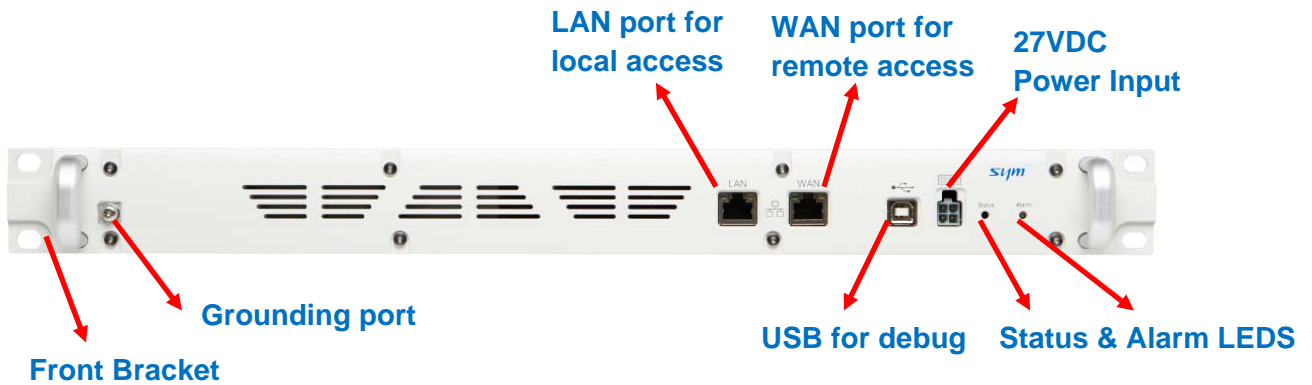
3.2. WHAT IS IN THE BOX?

No	Item	Description	Qty.
1	ISUG-01	RF Signal Analyzer	1
2	AC/DC Power Adapter	24 – 27 VDC/2.5 A	1
3	LAN cable (RJ-45)	Straight through, 10 ft	1



3.3. ISUG-01 AT A GLANCE

The ISUG-01 is a system designed to monitor and analyze RF waveforms of elements within the DAS system. The ISUG-01 has the capability to display real time spectrum waveforms and track interference sources of uplink frequencies. With a frequency range of 700 MHz to 2.7GHz and 24 input ports, the ISUG-01 can be a fundamental component of the network. It can be widely used in a DAS environment to monitor and analyze spectrum waveforms and create appropriate SNMP alarm notifications to a designated IP address.



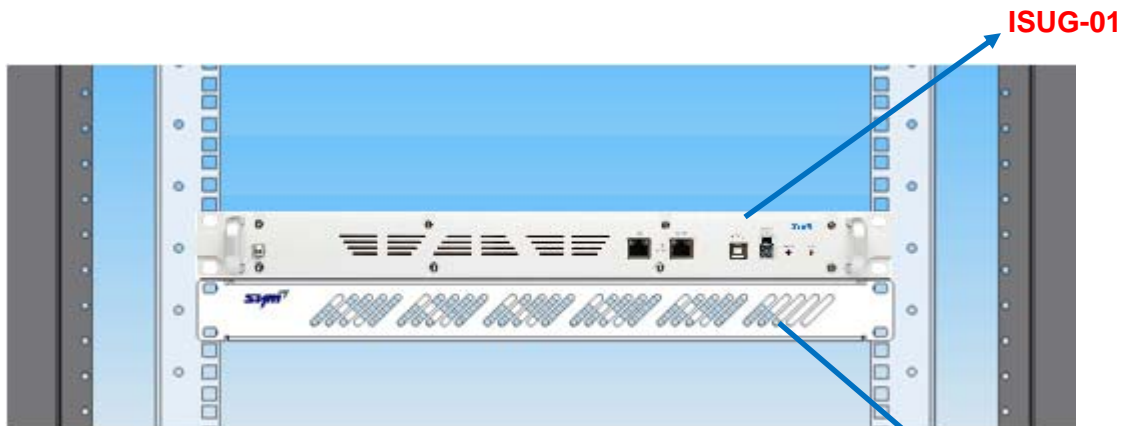
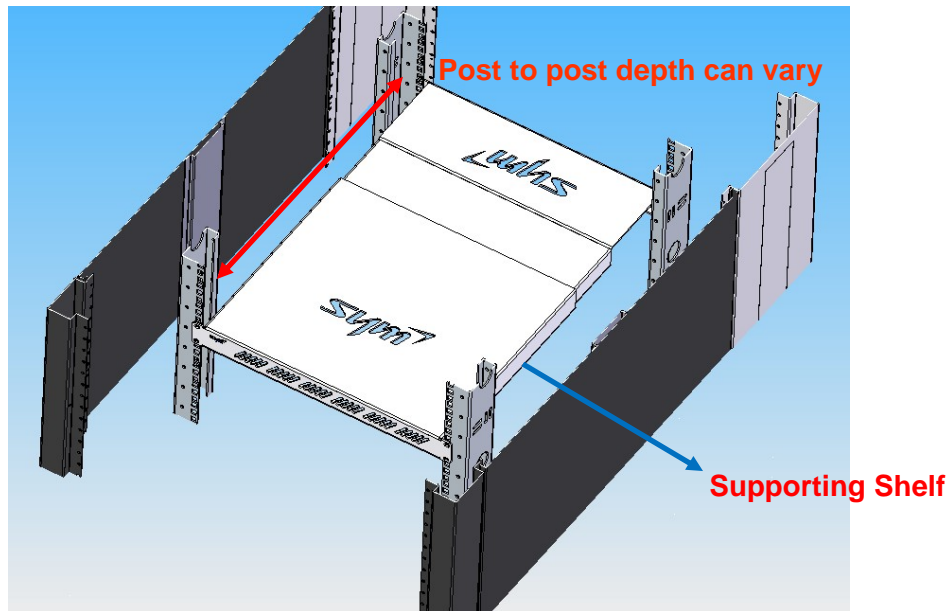
4. INSTALLATION

4.1. MOUNTING

The ISUG-01 is a 19 inch rack mountable unit. It can be mounted into a 4 post rack utilizing faceplate mounting. The faceplate with side securing can be placed at the front, rear or both ends of the unit. The unit also requires a supporting mounting shelf as shown below.

a. 4 post mounting

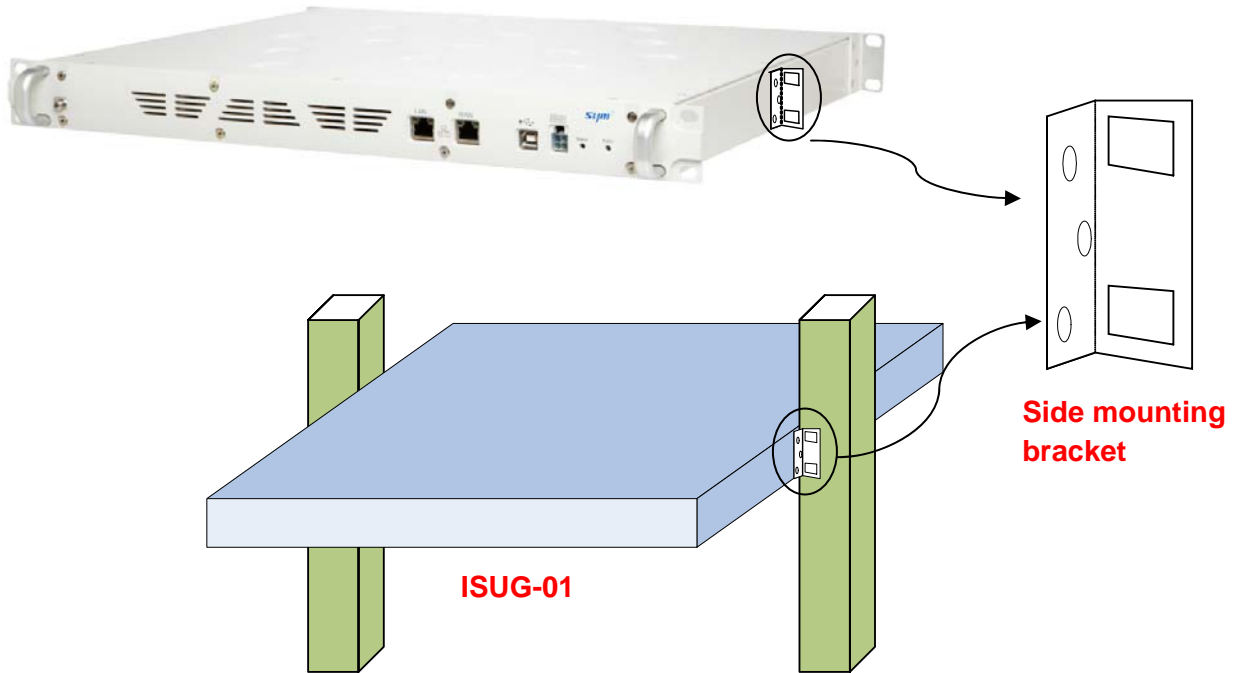
The variable depth of shelving between front and rear posts in the 4 post rack system require a supporting shelf for the ISUG-01.



Supporting Shelf

b. 2 post mounting

When the ISUG-01 is installed in a 2 post rack system, a 19 inch supporting shelf will not be required. A detachable side mounting bracket can be mounted at the middle of the ISUG-01 as shown below. Mounting brackets at the middle of the unit will allow for 2 post rack mounting.



4.2. CONNECTION

4.2.1 RF cable connection

The ISUG-01 needs to be installed between BTS (or in cases where applicable DAS conditioner) and DAS head end unit for monitoring uplink noise and RF signals.

If the DAS head end unit has a test ports or extra uplink ports available, it is recommended to connect those ports to the ISUG-01 for monitoring the uplink spectrum in real time.

RF input signal level should be in the normal operating range: -50 to -100 dBm/30kHz.



WARNINGS: Exposure to Radio Frequency Radiation

The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, this device should be used in such a manner that the potential for human contact during normal operation is minimized. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, the minimum separation distance of 7.9 inches (20 cm) must be maintained between human body and antenna of the Vision to satisfy FCC RF exposure requirements. For more RF exposure information, please visit the FCC website at www.FCC.gov

4.2.2 Ethernet connection

The Ethernet ports are located on front of the ISUG-01 as shown in section 3.3.

LAN Ethernet Port (for laptop connection)

The ISUG-01 can be configured locally with the built-in web-based graphical user interface. Using a standard Ethernet cable, connect your laptop to the “LAN” port on the ISUG-01. The LAN connection is simple to set up. The LAN connection should be used for initial setup and whenever the operator is at site.

Before you connect your laptop to the LAN port, verify your laptop’s Local Area Connection setting. For more detail information, please refer to section 6 laptop network setting”.

After a proper connection is made, the red and green LEDs near the ISUG-01 Ethernet connector will flash. The network hardware will determine the highest speed supported by both devices. With most PCs, the operating system will automatically establish the hardware and software network connection.

4.2.3 Power connection

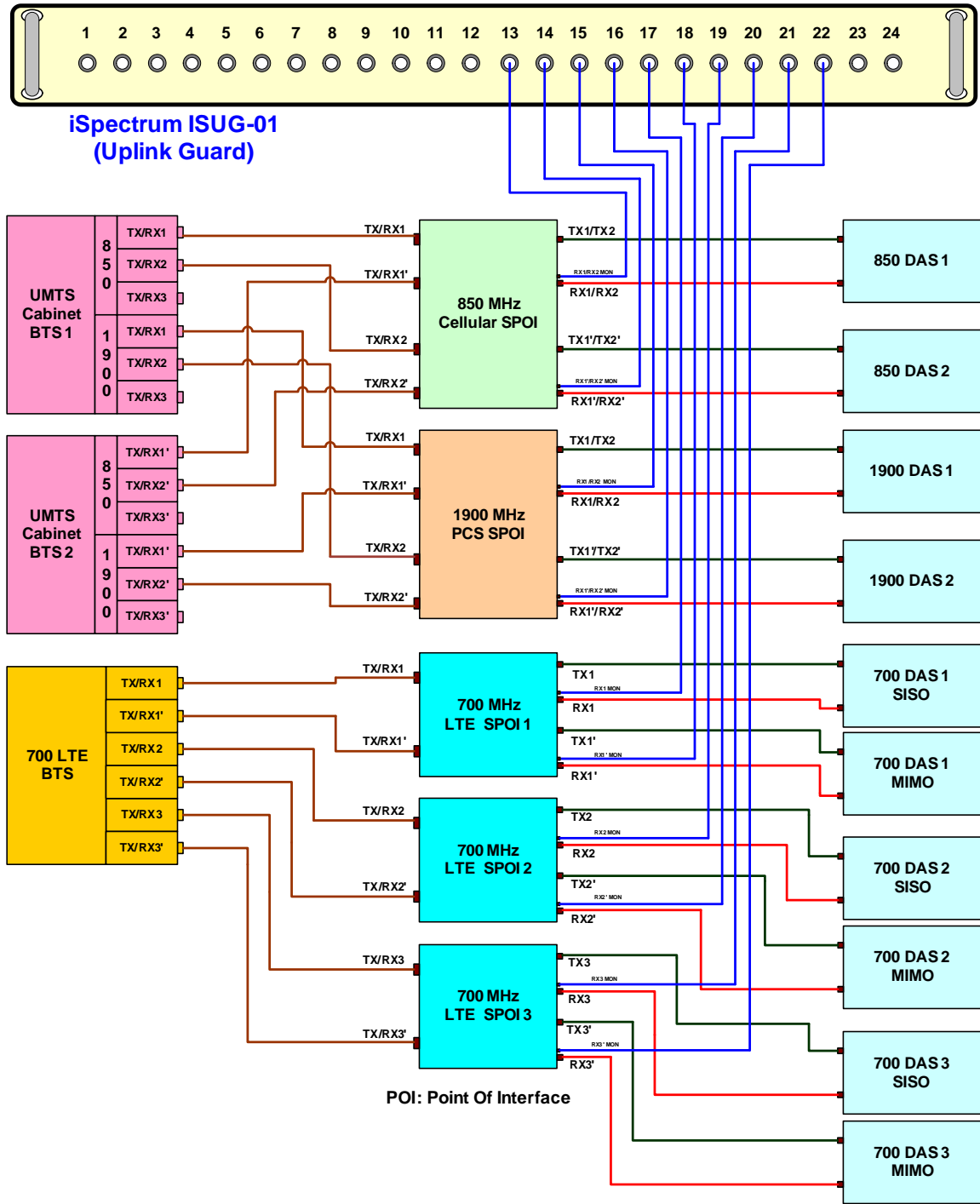
The ISUG-01 needs +27VDC power through using AC/DC power adaptor. If rack system has +24V to +27VDC power available, it can be directly connected to the ISUG-01. If ground is needed, ground port (ground cable is not included) can be connected to the rack system.



WARNINGS: This unit uses dangerous voltages. Loss of life, severe personal injury or property damage can be the result if the instructions contained in this manual are not followed. It is compulsory to ground the unit before connecting power.



ISUG-01 Installation example



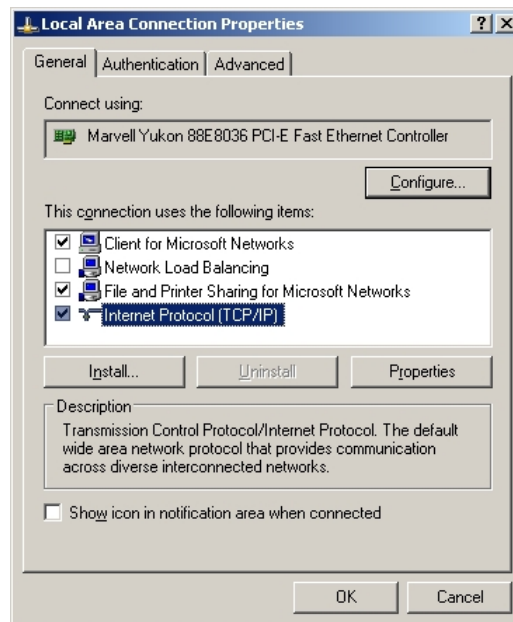
ISUG-01 RF signal connection between BTS and DAS

5. LAPTOP NETWORK SETTINGS (PC)

Before using Web GUI, make sure the Ethernet connection between user's laptop (or PC) and the Controller, LAN port of the Vision is established.

To begin network connection, proceed as follows:

- (1) Connect the ISUG-01 LAN port to Laptop (or PC) using Ethernet Cable (RJ-45).
- (2) Select TCP/IP in Local Network Properties.



[Figure 5-1] Local Area Connection Properties

- (3) IP Setting
Under Internet Protocol (TCP/IP) properties, make sure to select “Obtain an IP address automatically” Or “Use the following IP address”, input 192.168.1.XXX and the recommended IP address is 192.168.2.200.

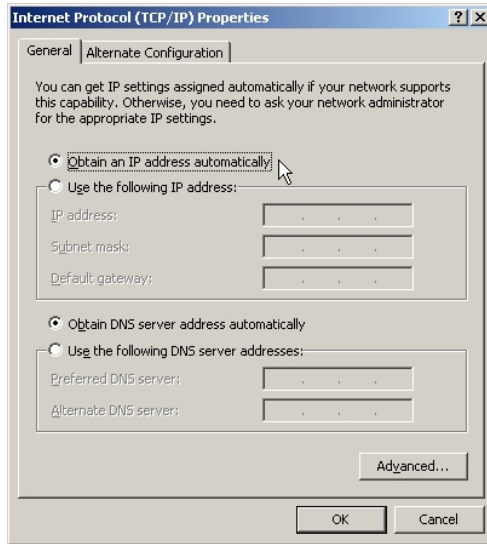
Assign the IP addresses as follows:

IP address: **192.168.1.200**

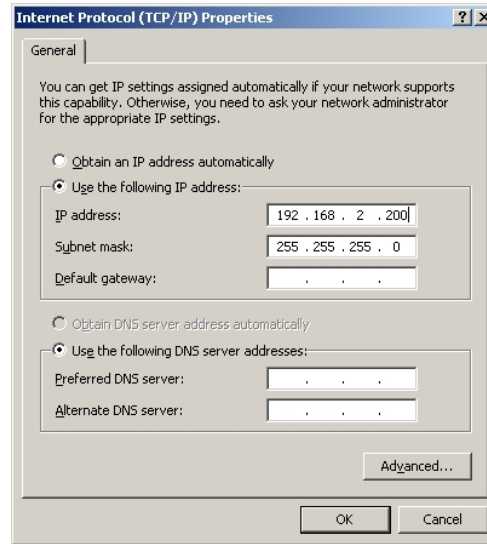
Subnet mask: **255.255.255.0**

Default gateway: **Leave it blank**

- (4) Open Internet Explorer and type in <http://192.168.2.1>
- (5) Once login screen appears, login to the ISUG-01.



Automatically (Dynamic) IP assignment



Manually (Static) IP assignment

6. WEB-BASED GUI

6.1. WEB-BASED GUI LOGIN

For security purposes, only authorized users can log into the Web GUI.

1. Connect laptop or PC to the LAN port of the ISUG-01.
2. Open a web browser
 - a. Recommended Internet Explorer, Google Chrome, or Firefox
3. Type in IP address for ISUG-01 unit: <http://192.168.2.1>
4. Enter User ID and Password assigned by administrator.
 - a. Default admin login: admin/password:admin
5. Click Login button.



6.1.1. GUI Layered Access Rights

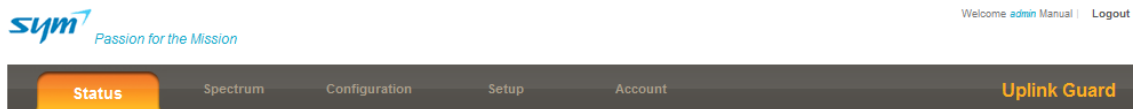
There are three types of access listed in the left column. Each access right allows for viewing the tab and/or viewing and setting values on the tab. See the table below.

TYPES OF ACCESS	Status	Spectrum	Configuration	Set Up	Account
Read	View	View/Set	View	View	n/a
Read/Write	View/Set	View/Set	View/Set	View/Set	n/a
Administrative	View/Set	View/Set	View/Set	View/Set	View/Set

6.2. TABS

The ISUG-01 has 6 tabs as shown in below. The “Account” tab will only be visible to admin access accounts. All other menus can be accessed by clicking directly onto the tab.

Login name will be displayed in the right top corner. User manual in PDF format will also be displayed and available.



6.2.1. Status

The Status tab is the first display upon successful login. From this page, a virtual display of the backside of the unit and all 24 input ports will be displayed. Each port number on the virtual display corresponds to the input port number on the unit installed on site.

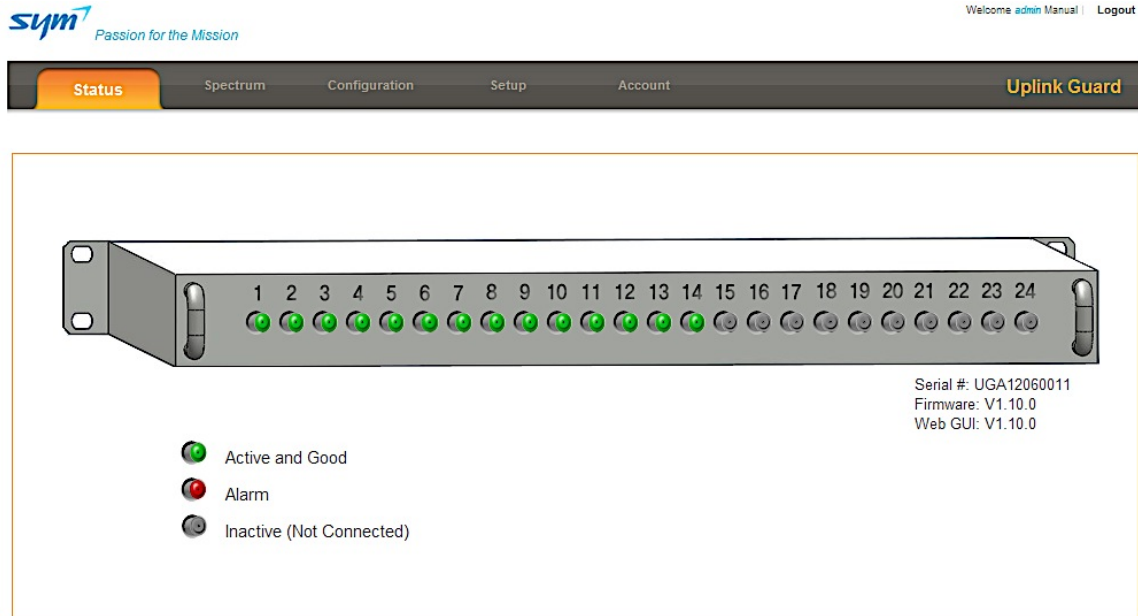
Ports are color coded as follows:

- * green = active and good
- * red= alarm status
- * gray = inactive (not connected)

Tip – Additional Status Information Display Technique

In order to access additional information regarding input ports from this screen, simply place the cursor over the input port number and the display will pop up with the following information: mobile service provider, sector, node and note.

Unit serial number, firmware and web GUI version are shown in the “Status” page.



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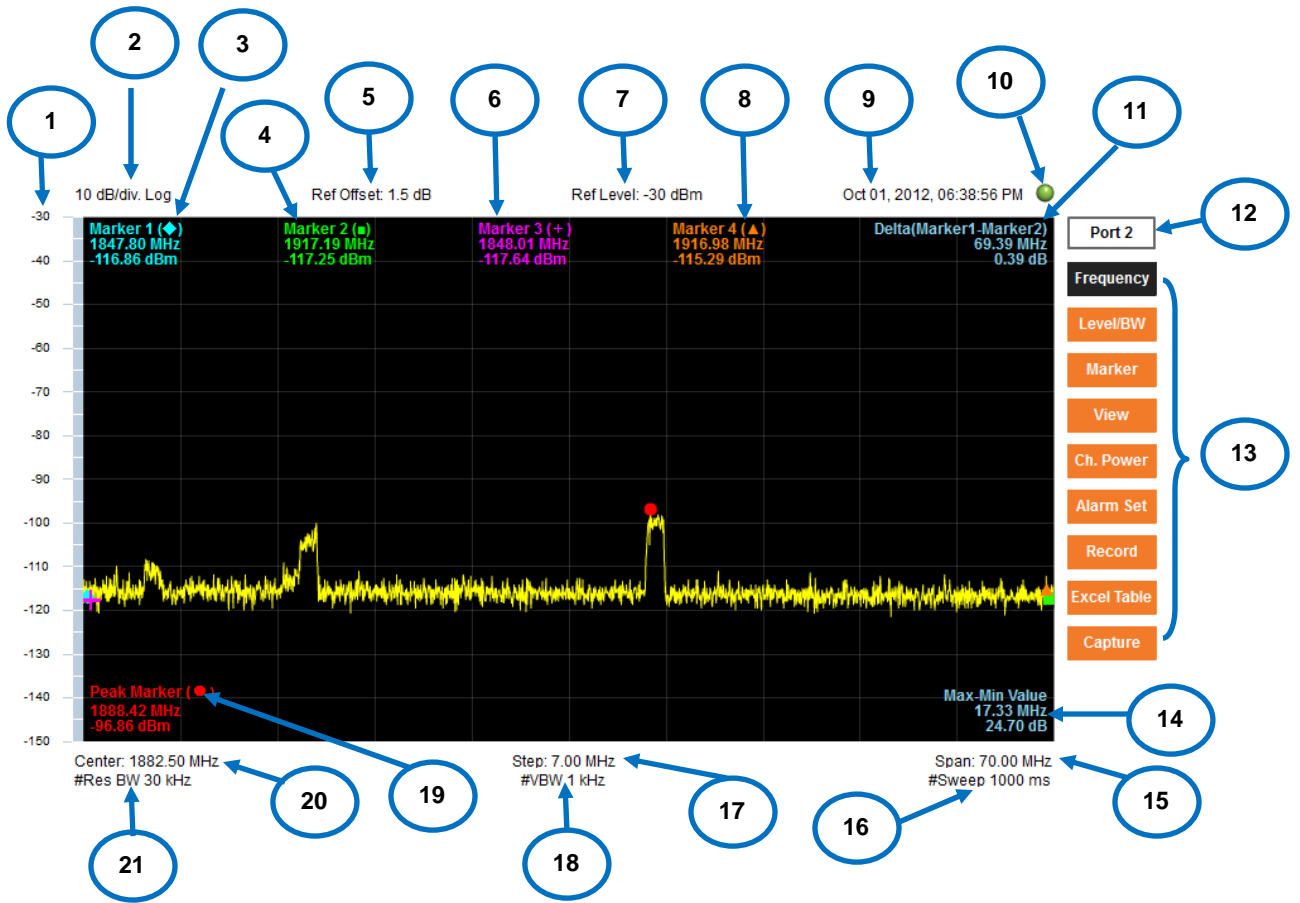
6.2.2. Spectrum

Click on the Spectrum tab to view the waveform for any of the 24 RF input ports. In order to choose a specific port, use the drop down menu to choose a port then click go.

The appropriate corresponding frequency range, mobile service provider, and sector will automatically be displayed directly to the right of the port selection.

Tip – Click to View Option

Users can also get to the spectrum page and display by clicking directly on the appropriate input port from the status page.



6.2.2.1. Spectrum Display Screen (via web-based GUI)

Item	Description	Notes
1	Amplitude Reference Level (Y-axis)	
2	Amplitude Scale	
3	Marker 1 Frequency	
4	Marker 2 Frequency	
5	Reference Offset	
6	Marker 3 Frequency	
7	Reference Level	
8	Marker 4 Frequency	
9	Date and Time Display	
10	Spectrum Data Communication Status Indicator	
11	Delta (difference) between Marker 1 and Marker 2	
12	Port Number	
13	Soft Key Menu Title	see section 8.2.2
14	Delta (difference) between Max and Min value	
15	Frequency Span (X-axis)	
16	Sweep Time	
17	Step Increments	
18	Video Bandwidth	
19	Peak Marker	
20	Center Frequency (X-axis)	
21	Resolution Bandwidth	

6.2.2.2. Frequency

Frequency settings can be adjusted and set using the tool bar that can be found at the bottom of the spectrum display. Start/Stop and Center/Span Frequency settings can be customized by typing in desired values and checking to enable then clicking the set key.



Start/Stop Frequency: Start 1847.50 MHz, Stop 1917.50 MHz
 Center/Span Frequency: Center 1882.50 MHz, Span 70.00 MHz
 [Set]

Maximum Bandwidth (70 MHz)

No.	Band Name	Start (MHz)	Stop (MHz)
1	700 MHz Lower LTE	672	742
2	700 MHz Upper LTE	746.5	816.5
6	700 MHz Public Safety	765	835
4	800 MHz Public Safety	780	850
5	850 MHz Cellular	801.5	871.5
6	900 MHz SMR	863.5	933.5
7	1700 MHz AWS	1697.5	1767.5
8	1900 MHz PCS	1847.5	1917.5
9	2.5 GHz Lower WiMAX	2498	2568
10	2.6 GHz Middle WiMAX	2561	2631
11	2.6 GHz Upper WiMAX	2622	2692

6.2.2.3. Level/BW (bandwidth)

The level/BW tool bar is shown at the bottom of the screen and enables adjustment of the reference value for amplitude (Y-axis) using either auto-leveling or manual settings. The offset value for the port can also be modified for viewing purposes (permanent offset configuration set by installer will not be lost).



Auto Level: Offset 1.5 dB (-99.9 to +99.9, 0.1 step) [Bandwidth] []
 Manual: Ref. Level -30 dBm (-170 to 70, 1 step) Scale 10 dB (1 to 20, 1 step) RBW 30 kHz VBW 1 kHz [Set]

6.2.2.4. Marker

Adjustable Markers 1-4

There are four markers displayed on the spectrum graph. The four marker values can be changed by using the cursor to drag and drop to desired locations on the spectrum. From the Marker soft key individual values can be input by users. Markers can also be disabled and removed from the display by un-checking the box beside the marker title.

Fixed Marker Values

Peak Marker Value remains set and will adjust automatically as the waveform changes. Delta (Marker 1 – Marker2) displays the frequency and amplitude differences between marker 1 and marker 2. Max – Min Value marker displays the difference between the maximum and minimum values for frequency and amplitude.



6.2.2.5. View

The View soft key allows for three different view settings of the spectrum. Choose the view to display then push set to change view setting.

- a. Normal View: This view displays the normal spectrum display and is the default setting.
- b. Max Hold View: This view has 2 options.

Trace Off

This ISUG-01 will automatically display the maximum amplitude values for each frequency creating a max hold display with the trace function off.

Trace On

The ISUG-01 will display the previously mentioned max hold view with the streaming live spectrum in white for a dual trace view.

- c. Average View: This view will display the average spectrum display as defined by the number of continuous sweeps (number of times) designated by the user. The average will be calculated in a matter of seconds and displayed frozen on the display.



6.2.2.6. Channel Power

The Channel Power setting allows users to set channel power measurements for a selected frequency range for two separate channel power measurements. In order to set channel power, enter start/stop frequencies for the channel power measurement, check the box to enable and click the set key. Channel Power will be displayed with vertical lines on the spectrum and numerical values at the bottom center of the display.

<input checked="" type="checkbox"/> Channel Power 1	<input type="checkbox"/> Channel Power 2
<input type="button" value="Start"/> 1880.00 MHz <input type="button" value="Stop"/> 1885.00 MHz	<input type="button" value="Start"/> N/A MHz <input type="button" value="Stop"/> N/A MHz <input type="button" value="Set"/>

6.2.2.7. Alarm Set

Alarm settings are conditional based on frequency (occurrence) and time. There are two types of alarms that can be generated: Channel Power Alarms and Spurious alarms.

Condition	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Block 9	Block 10
Power or Spurious alarm will be generated when the alarm condition meets or exceeds the rate <input type="text" value="15"/> percent for <input type="text" value="1"/> minutes. <input type="button" value="Set"/>										

Condition

- Exceeds the rate: Choose percentage of alarming that needs to occur in order to signal an alarm in increments of 5, from 5% to 100%.
- For the (value) minutes: The amount of time that the ISUG-01 will perform continuous sweeps

Alarming will occur when either condition set is met.

Blocks 1-10

- Enable: check to activate the alarm for this block
- Start: enter beginning frequency for alarm block
- Stop: enter ending frequency for the alarm block
- Upper: enter upper threshold for alarm value
- Lower: enter the lower threshold for the alarm value
- Peak to Noise: enter the difference from noise spectrum to peak value for spurious alarming

6.2.2.8. Record

The ISUG-01 has spectrum recording for post processing. This feature is a FTP server based recording. The ISUG-01 will send a recorded file (approx..238 Kbyte/2 minutes) playing time to the destination IP (FTP server IP address). Multiple files will be sent with time and date stamps to accommodate the entire recording reserved. To replay the recorded files, a windows based replayer GUI program will be required. Please contact SYM Technology to receive instructions for downloading the replayer program.

Event ID	EVENT	Start	01/02/13	12:00	Reserved	Stop
Destination IP	undefined	Stop	01/02/13	18:00	<input type="checkbox"/>	<input type="checkbox"/>

- Event ID: Label event ID. This name will appear for the recorded files sent to the FTP server.
- Destination IP: Wet FTP server IP address for the ISUG-01 to send recorded files.
- Start: Enter date and time to begin recording
- Stop: Enter date and time to end recording
- Record: Click button under record to schedule reserve recording.
- Stop: Click button to stop/cancel any recording or reserved recording.

6.2.2.9. Excel Table

Clicking this soft key will allow users to save an excel file containing detailed information including frequency value and corresponding amplitude value in an excel spreadsheet. This can be saved to your computer in a designated folder when the pop up screen is displayed.

6.2.2.10. Capture

The Capture soft key will save a screen capture file (jpg) of the entire screen displayed. The file can be saved to any location on your computer.

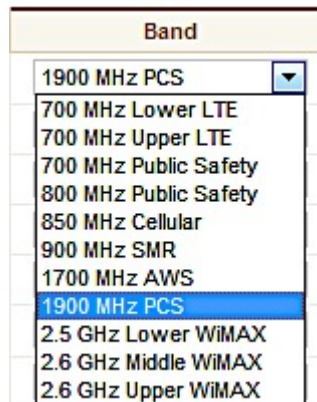
6.2.3. Configuration

The configuration tab enables users to activate or cause individual ports to be inactive by checking beside the port number. Mobile service provider, frequency band, and sector can be assigned to individual ports by utilizing a drop down menu.

Check	Port	MSP	Band	Sector	Node	Offset	Note
<input checked="" type="checkbox"/>	1	Sprint	1900 MHz PCS	S1	SECT-1A	1.5 dB	SECT-1A
<input checked="" type="checkbox"/>	2	Sprint	1900 MHz PCS	S2	SECT-1B	1.5 dB	SECT-1B
<input checked="" type="checkbox"/>	3	Verizon	850 MHz Cellular	S3	SECT-2A	1.5 dB	SECT-2A
<input checked="" type="checkbox"/>	4	Verizon	700 MHz Upper LTE	S4	SECT-2B	1.5 dB	SECT-2B
<input checked="" type="checkbox"/>	5	Verizon	850 MHz Cellular	S5	SECT-3A	1.5 dB	SECT-3A
<input checked="" type="checkbox"/>	6	AT&T	700 MHz Lower LTE	S6	SECT-3B	1.5 dB	SECT-3B
<input checked="" type="checkbox"/>	7	AT&T	1900 MHz PCS	S7	SECT-4A	1.5 dB	SECT-4A
<input checked="" type="checkbox"/>	8	AT&T	850 MHz Cellular	S8	SECT-4B	1.5 dB	SECT-4B
<input checked="" type="checkbox"/>	9	T-Mobile	1900 MHz PCS	S9	SECT-5A	1.5 dB	SECT-5A
<input checked="" type="checkbox"/>	10	T-Mobile	1700 MHz AWS	S10	SECT-5B	1.5 dB	SECT-5B
<input checked="" type="checkbox"/>	11	Sprint	800 MHz Public Safety	S11	SECT-6A	1.5 dB	SECT-6A
<input checked="" type="checkbox"/>	12	Sprint	1900 MHz PCS	S12	SECT-6B	1.5 dB	SECT-6B
<input checked="" type="checkbox"/>	13	Verizon	700 MHz Upper LTE	S13	SECT-7A	1.5 dB	SECT-7A
<input checked="" type="checkbox"/>	14	AT&T	700 MHz Lower LTE	S14	SECT-7B	1.5 dB	SECT-7B
<input type="checkbox"/>	15			S1		dB	
<input type="checkbox"/>	16			S1		dB	
<input type="checkbox"/>	17			S1		dB	
<input type="checkbox"/>	18			S1		dB	
<input type="checkbox"/>	19			S1		dB	
<input type="checkbox"/>	20			S1		dB	
<input type="checkbox"/>	21			S1		dB	
<input type="checkbox"/>	22			S1		dB	
<input type="checkbox"/>	23			S1		dB	
<input type="checkbox"/>	24			S1		dB	

Set

- Check: A port is enabled to monitor the input signal.
 - When port is disabled (unchecked), the ISUG-01 won't sweep the port.
- MSP: Mobile Service Provider. Assign one of the MSPs.
- Band: User can select one of the bands to sweep input signal continuously.
- All bands are uplink frequency bands within 700 MHz to 2.7 GHz.



- Sector: Label Sector number (S1 to S24)

- Node: Label this to reflect the signal source. Node can be labeled using up to 30 characters.
- Offset: Offset Value should be input by installer at the time of installation. RF cable loss and coupling loss (if needed) should be entered as an offset value.
- Note: The note section can contain up to 30 characters to be used as needed.

In order to set information, users must click the orange set key at the bottom of the page. Read access users will not have access to set any of the values within the configuration page.

6.2.4. Setup

6.2.4.1. Network

A WAN Ethernet connection should be used to obtain an IP address automatically as this port works as DHCP client mode. Once a DHCP server is connected to the WAN port, the ISUG-01 will be assigned with an IP address automatically. This IP address should be identified and accessible for remote access.

It is highly recommended to use a static IP address rather than “Obtain an IP Address Automatically (IPV4)” as shown below.

Ethernet Configuration (WAN)

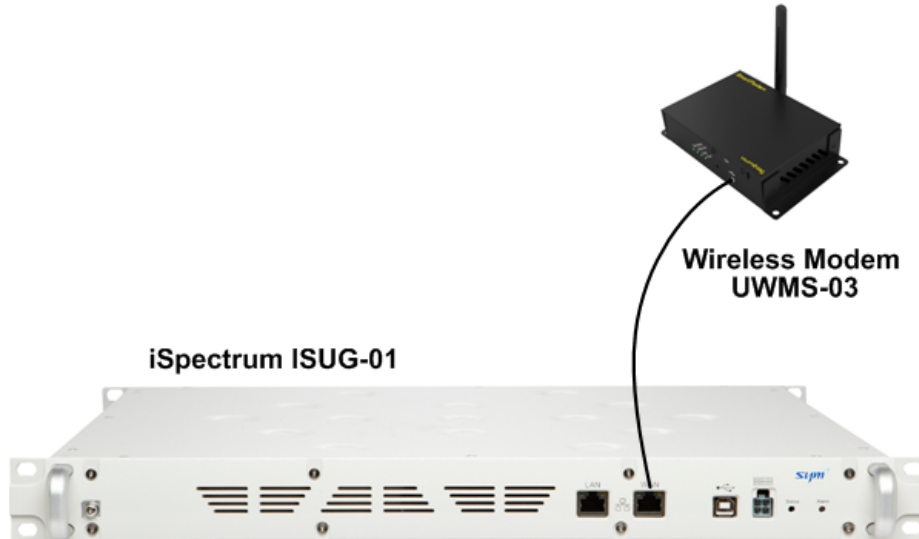
Obtain an IP Address Automatically (IPV4)

IP Address	99 . 62 . 25 . 40
Subnet Mask	255 . 255 . 255 . 240
Default Gateway	99 . 62 . 25 . 45

Obtain an IP Address Automatically (IPV6)

IP Address	
Subnet Prefix Length	
Default Gateway	

If there is no valid wired internet connection, a wireless modem (ex. UWMS-03) can be connected to the ISUG-01. By configuring the port forwarding table on the wireless modem, users will be able to access the ISUG-01 remotely using the modem's PPP IP address and port forwarding number.



An SNMP Destination IP address must be input for alarm notification. The Site ID should be labeled and the rate for receiving notification of the ISUG-01's status can be chosen using the drop down menu from 1 to 60 minutes. The location section will require the latitude and longitude of the location. Date and time settings for the unit should be set based on the location of the site install. At the completion of each section the set button should be clicked to save these settings.

6.2.4.2. Update

Firmware Updates will be sent out if necessary and can be installed by opening them. The Factory Set button will reset all settings to default factory settings. All configuration settings will be lost. The Reboot button will restart the system through power cycling, information will be saved. If the unit is damaged or needs replacement, the current configuration can be saved onto a computer using the save configuration key. The same configurations can then be loaded onto a new unit using the load configuration key. The Event Log contains all activities that have occurred on the GUI excluding alarm information. The date time and type of event, such as configuration change, login, etc will be displayed as a file to be saved to your computer.

6.2.5. Account

The Account Tab includes 3 sub tabs: User List, New Account and New Administrator.

The User List will show all users and enables the administrator to delete accounts. The New Account sub tab enables the administrator to designate new accounts and security access. The New administrator tab is for changing administrator user name and password.

7. SPECIFICATIONS

Item	Downlink
Uplink Frequency Range	698-716 MHz & 776-787 MHz, 700 MHz LTE 793-805 MHz, 700 MHz Public Safety 806-824 MHz, 800 MHz Public Safety 824-849 MHz, 850 MHz Cellular 896-901 MHz, 900 MHz SMR 1710-1755 MHz, 1700 MHz AWS 1850-1915 MHz, 1900 MHz PCS 2496-2690 MHz, 2.6 GHz WiMAX
Monitoring RF Ports	24 total
Display Bandwidth	70 MHz max referenced to center frequency of each band
Input Power Range	-50 to -100 dBm/30 kHz
Minimum Detectable Signal	-110 dBm/30 kHz
Measurement Accuracy	±2.0 dB max
Spectrum Resolution	30 kHz RBW & 1 kHz VBW
RF Port to Port Isolation	50 dB
VSWR	2:1 max
Sweep Time	300 ms max with bandwidth 70 MHz
Alarm	SNMP Capable
Local/Remote Access	Web based GUI, RJ-45 Ethernet Port, 10/100 Mbps
RF Connector	SMA Female
Power Supply	27 VDC
Power Consumption	15 W
Power Connector	4 Pin Molex
Operating Temperature	-5°C to +50°C
Dimensions	19" x 15" x 1.75"
Weight	15 lbs