SC3500
Quick Start Guide
CSMA

Notice

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Revision History

Version	Date	Changes
1.0	November, 2011	Original
1.1	April 12, 2012	Added FCC Notice
1.2	May 10, 2012	Edited Text

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1.   Introduction

This quick start user guide contains all essential information for the user to configure the SC3500 radio and to also run an iperf network test. The configuration of the radio is done through a web interface.

2.   SC3500 Network

Each SC3500 radio has a fixed static IP address in the 172.20.0.0 network. The radio operates as a network switch; the user equipment does not need to be on the same subnet as the radio during operation. It is possible to setup a secondary IP address on the radio if the user finds this feature convenient. Setting up a secondary IP address is useful if the user wishes to access the radio's web interface in his network.

3.   Configuring the Radio

Connect a laptop to the SC3500 using an Ethernet cable and turn on the SC3500. Users can type "ping IPaddress" in order to determine whether the SC3500 is up. A web configuration will be then available by typing the radio IP address in a web browser. Users will be redirected to an index.html webpage. (See Figure 1)
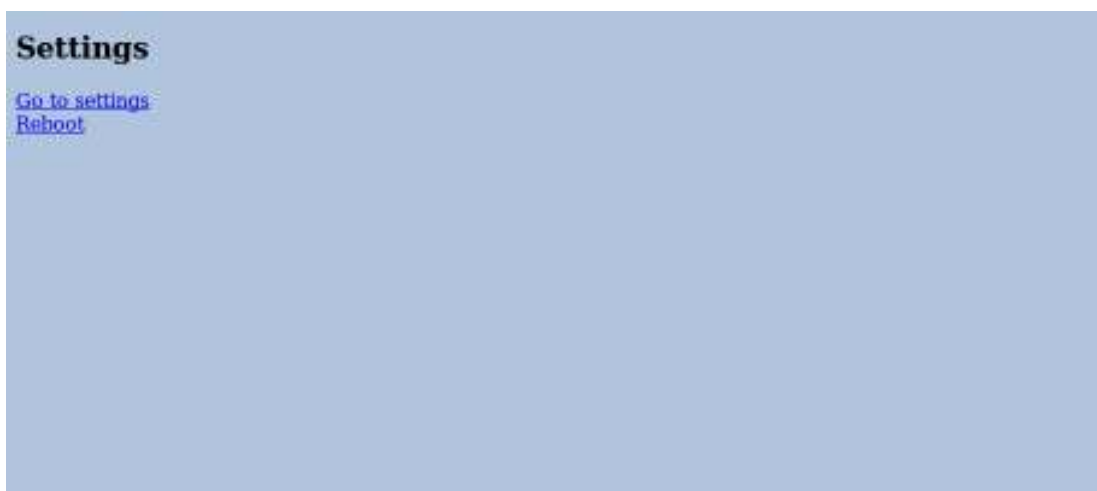

Settings

Go to settings
Reboot

Figure 1 Index.html page

4. Web Interface

"index.html" page will show up when users access SC3500 though a web browser.

o This is a default web file that the users will see when first connecting to the radio web interface. Users can either select "Go to settings" or "Reboot". If "Go to settings" is selected, the webpage will be directed to the setting interface. If "Reboot" is selected, the SC3500 will reboot (See Figure 2). Note the web interface will be unavailable during the rebooting process.
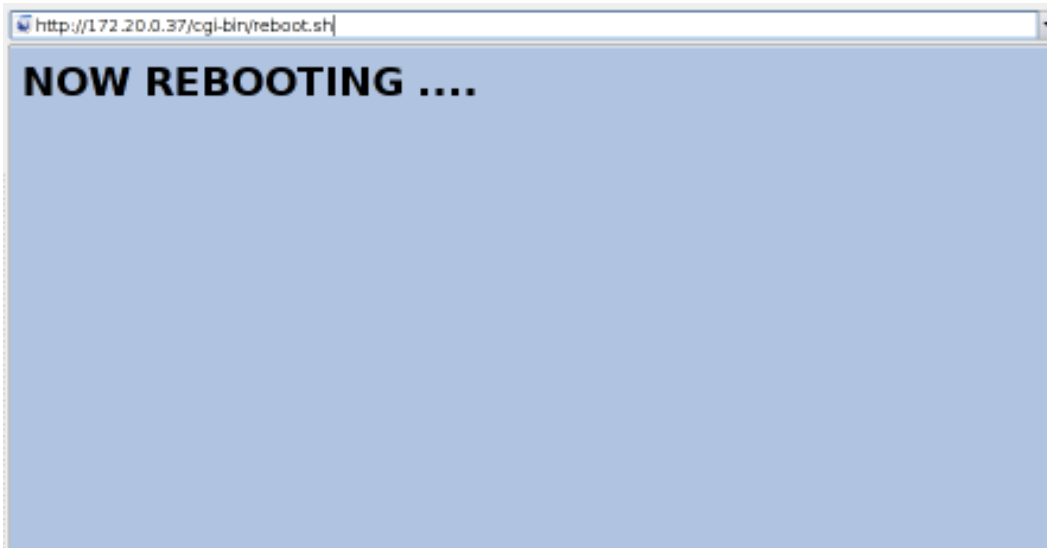

http://172.20.0.37/cgi-bin/reboot.sh

NOW REBOOTING ....

Figure 2 Rebooting webpage

The setting interface has two pages: Basic (See Figure 3), and Advanced (See Figure 4).

4.1 Basic

Figure 3 Basic setting page

○ This page is used to make basic configurations for the SC3500.

○ Frequency: This defines the frequency of the signal. There is a drop-down menu for frequency selection.

○ Bandwidth: This defines the bandwidth of the signal.

○ Save and Reboot: The new value for the frequency and bandwidth will be set as default values. Then reboot SC3500.

○ Transmit Power: This defines the power of the signal.

○ Apply: Apply the new power to the signal. The value changes back to the default setting after reboot.

○ Save and Apply: Set the new value as the default power and apply the new power to the signal.

4.2   Advanced

Figure 4 Advanced setting page

- o This page is used to set advanced configurations.

- o Link Distance: Set to an approximate maximum distance between nodes in meters, e.g., 1000 for 1km.

- o Modulation: Choose the modulation and coding scheme (MCS) from 0 to 3 and 8 to 11. If it is set as AUTO, then link adaptation will be used.

- o Network Mode or PHY Diagnostics: Switch between Network mode and PHY Diagnostics. If the value equals 0, it is Network mode; if the value equals 1, it is PHY Diagnostics.

- o IP Address: Secondary IP address for the radio. The user may set this to be on the user's IP network, e.g., 192.168.2.10. Once this secondary IP address is set, the user may access the radio web page using either the native IP address or the secondary IP address.

- o Netmask: Netmask for the Secondary IP address, e.g. 255.255.255.0.

- o Apply: Apply the new values but does not save them to flash.

- o Save and Apply: Save the new values to flash and apply.

5. Setting up an Iperf Test

5.1 Required Equipment

- Two laptops with iperf or jperf installed. It is beyond the scope of this manual to cover the installation and operation of these tools. The laptops must be on the same subnet but not necessarily the same subnet as the radios (172.20.0.0). It is not required for the user to set a secondary IP address on the radio to perform this test. It is recommended the iperf or jperf tests are conducted just between the laptops using an Ethernet switch or cross-over Ethernet cable between them to verify the laptops and iperf/jperf tools.

- Two or more SC3500 radios properly configured.

5.2 Running Iperf Test

- Connect a laptop to one SC3500 radio using the Ethernet cable.

- Connect the other laptop to another SC3500 radio.

- Power up the radios and verify the radios are ready.

- At the receiver side type the following in a terminal

  o iperf –s –u -i 1

- At the transmitter side type the following in a terminal

  o iperf –c receiver_laptop_ip_address –u –i 1 –b 1M –t 60

6. Precautions and Recommendations

6.1 Saving the Radio Configuration

It is very important that the radio does not lose power during any configuration changes while in the web interface in which the user requests a "save." Partial saving of the configuration to the radio due to power interruption may disable the radio requiring reprogramming at the factory. Also, please wait for a "done" feedback at the web interface before proceeding to any other configuration changes.

6.2 Network Tests

6.2.1 Ping

The "ping" command is often used for quick network connectivity and latency tests.

6.2.2 Multicast

It is recommended to turn link adaptation off if the user intends to use large amount of multicast traffic with the current release.

6.2.3 TCP dumps

Users using network sniffers may note the radio exposes management packets on the Ethernet interface (port 698 and 60000). You may want to filter those ports.

7.   FCC Notice

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 receiver.

   * Connect the equipment into 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.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate the equipment.

To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.