



# VIEW Certified Configuration Guide

Motorola

WS5100 Wireless Switch  
with AP 300

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## Introduction

Polycom's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between SpectraLink Wireless Telephones and WLAN infrastructure products.

The products listed below have been thoroughly tested in Polycom's lab using the VIEW Certification Test Plan. This document details how to configure the WS5100 Wireless Switch and the AP300 access point (AP) with SpectraLink Wireless Telephones.

## Certified Product Summary

Manufacturer:	Motorola: <a href="http://www.motorola.com/products.jsp">http://www.motorola.com/products.jsp</a>			
Approved products:	WS5100 Wireless Switch with AP300			
RF technology:	802.11b/g/a			
Radio:	2.4 GHz (802.11b/g), 5 GHz (802.11a)			
Tested security :	WPA-PSK, WPA2-PSK			
AP and WLC software version certified:	3.1			
SpectraLink handset models certified: **	e340/h340/i640	8020/8030		
SpectraLink handset software certified:	89.135	122.017		
SpectraLink radio mode:	802.11b	802.11b	802.11g	802.11a
Maximum telephone calls tested per AP:	11	11	12 *	
Network topology	Switched Ethernet (recommended)			

\* Maximum calls tested during VIEW Certification. The certified product may actually support a higher number of maximum calls for 802.11a and 802.11g radio modes

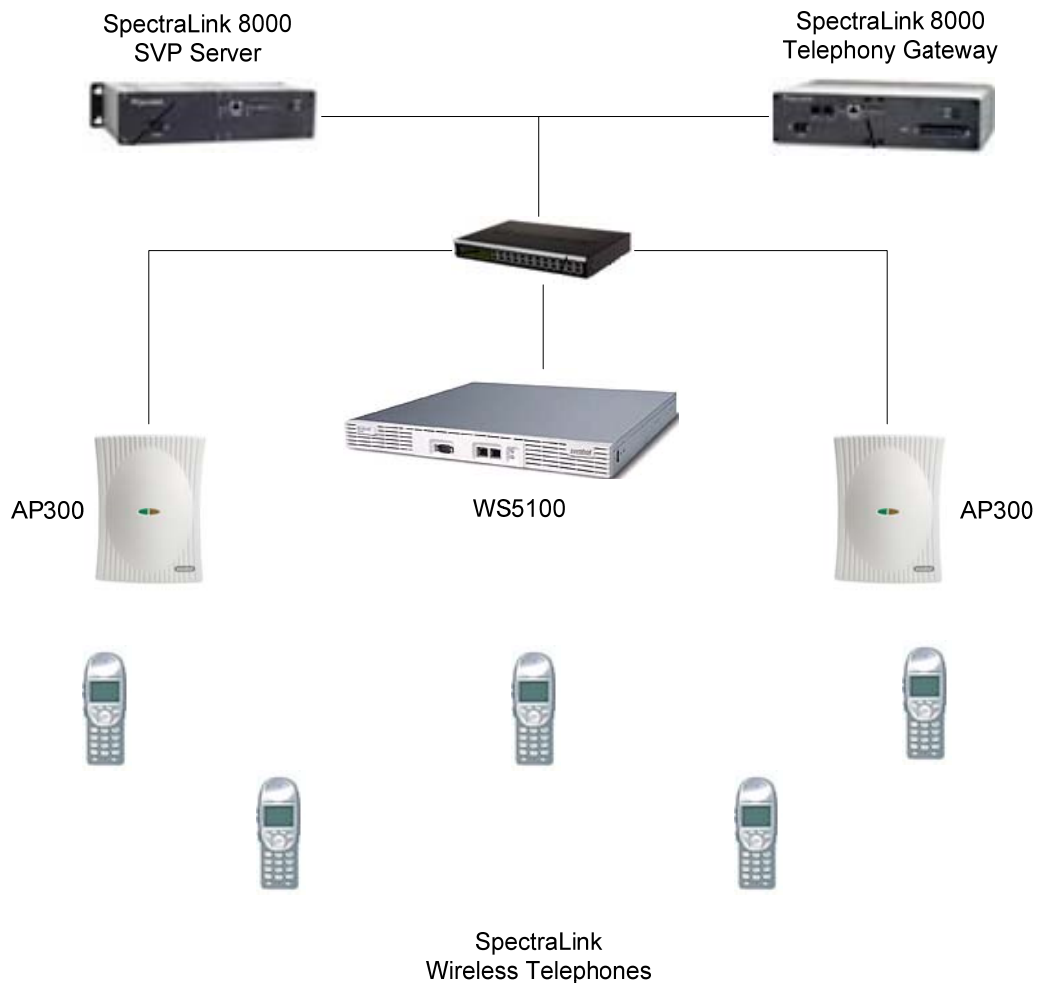
\*\* SpectraLink handset models 8020/8030, e340/h340/i640 and their OEM derivatives are VIEW Certified with the WLAN hardware and software identified in the table. Throughout the remainder of this document they will be referred to collectively as "SpectraLink Wireless Telephones".

## Service Information

If you encounter difficulties or have questions regarding the configuration process, please contact Motorola technical support at (800) 653-5350, or at <http://www.symbol.com/services/contactsupport>.

# Network Topology

The following topology was used during VIEW Certification testing.



# Configuration Settings

## Installing a New Image

The VIEW Certified firmware release can be obtained from Motorola's Developer Zone at

<http://support.symbol.com/support/product/softwaredownloads.do>.

Upgrading the WS5100 Wireless Switch to the new firmware can be done through the Web interface or through the command line interface (CLI). Place the image on the FTP server, TFTP server or through Compact Flash card, depending on the file transfer mechanism chosen.

### Installing firmware through the CLI

1. Enter your username and password to log into the CLI. The defaults are login: **cli user**, admin password: **superuser**. The serial interface parameters are **19200, 8, n, 1, n**.
2. Connect the FTP/TFTP server to subnet 1.
  - a. For TFTP, issue the following commands.

```
WS5100>en
WS5100#upgrade
tftp://TFTP_SERVER_IP_ADDR/WS5100_FIRMWARE_FILENAME
```

- b. For FTP, issue the following commands.

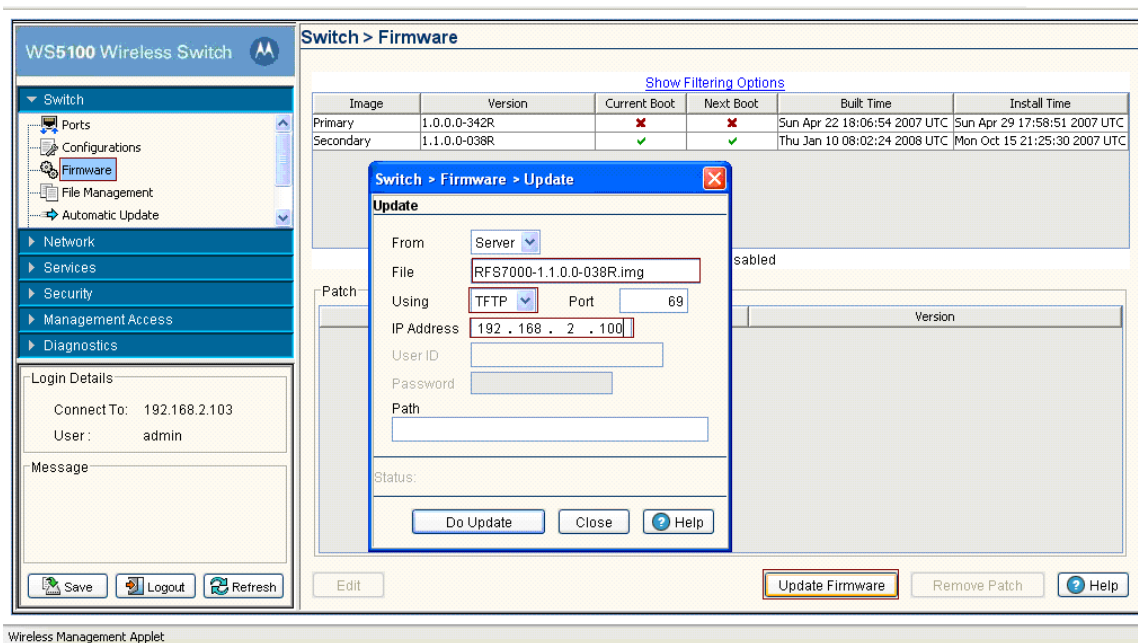
```
WS5100>en
WS5100#upgrade
ftp://FTP_USERNAME:FTP_PASSWD@FTP_SERVER_IP_ADDR/
_FIRMWARE_FILENAME
```

3. After the upgrade is successful issue the following command

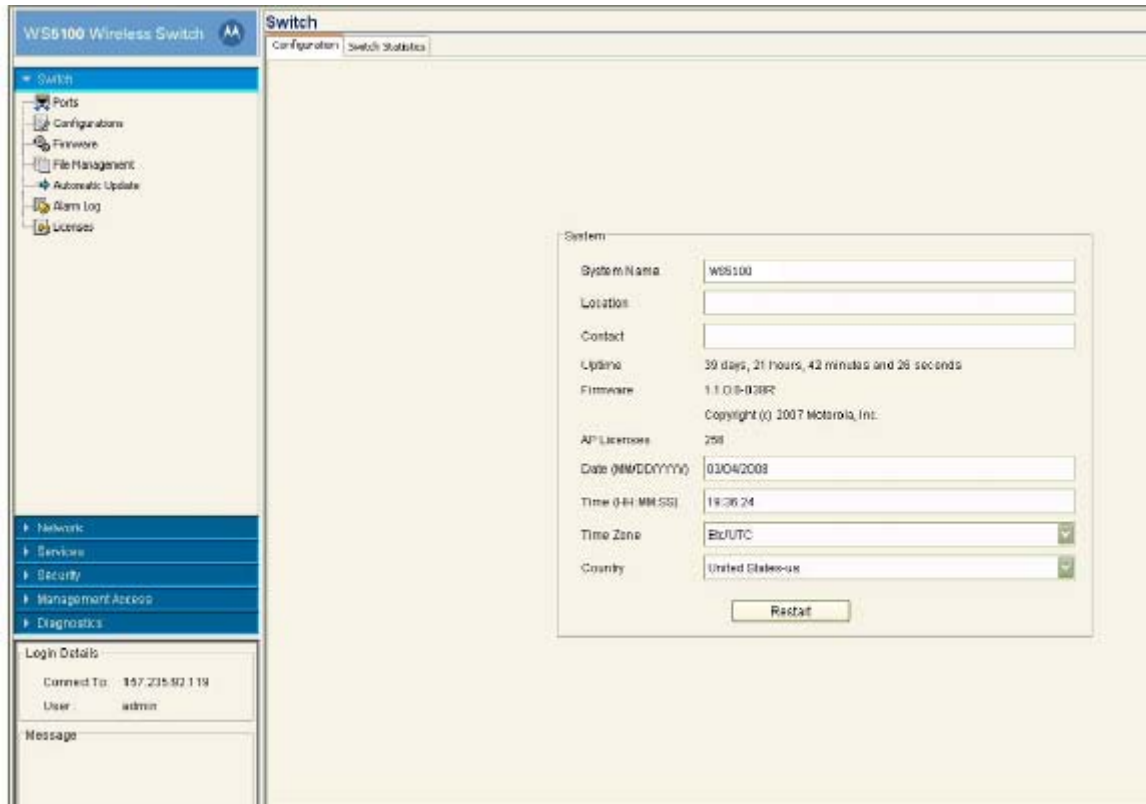
```
WS5100#reload
```

## Installing firmware through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane under **Switch**, click **Firmware**.
3. In the **Firmware** screen, click the **Update Firmware** button located at the lower right of the page.
4. In the **Update** dialog box, select **TFTP** from the **Using** drop-down list.
5. At **File**, enter the RFS7000 firmware image filename.
6. At **IP Address**, enter the TFTP server IP address.
7. Click the **Do Update** button.
8. After the RFS7000 Wireless Switch performs the upgrade, navigate to the **Switch** window.



9. In the navigation pane under **Switch**, click **Configurations**.
10. Click the **Restart** button to reboot the switch.



## Installing the AP license through the CLI

For the WS5100 to adopt AP300's, a license has to be installed. Obtain the license key and then install based on the following steps

```
WS5100>en
WS5100#conf t
WS5100(config)#license AP <LICENSE_KEY>
```

## Installing the AP License through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane, under **Switch**, click **Licenses**.
3. Enter the **License Key** and **Feature Name** as seen in the figure below.
4. Click the **Install** button to install the license.

The screenshot shows the 'Switch > Licenses' configuration page. The 'Install License' section contains the following fields:

- License Key: 010636d1e252f684aa5998c802952
- Feature Name: AP
- Serial Number: 6283529900094

An 'Install' button is located next to the Feature Name field. Below this section is a 'Feature Licenses' table:

Feature Name	License Count	License Usage	License Key
AP	256	0	05a79e40 09296017 0c49015b c7a4201d 22725...

At the bottom of the page, there are buttons for 'Save', 'Logout', 'Refresh', and 'Help'.

# Configuring the Wireless Switch from the Default Configuration

## Radio Settings

### Configuring radio settings through the CLI

The parameters for default-11bg will be configured on the switch. When an AP is adopted on the switch it will inherit all the default-11bg and default-11a parameters. To configure radio settings for the wireless switch, use the following commands.

#### When SpectraLink Wireless Telephones are configured for 802.11b & b/g mixed mode:

```
WS5100>en
WS5100#conf t
WS5100(config)#wireless
WS5100(config-wireless)#country-code us
WS5100(config-wireless)#radio add 1 00-A0-F8-CD-ED-EC
11bg ap300
WS5100(config-wireless)#radio 1 beacon-interval 100
WS5100(config-wireless)#radio 1 dtim-period 3
WS5100(config-wireless)#radio 1 bss 1 1
WS5100(config-wireless)#radio 1 speed basic1 basic2
basic5p5 6 9 basic11 12 18 24 36 48
```

#### When SpectraLink Wireless Telephones are configured for 802.11g only mode:

```
WS5100>en
WS5100#conf t
WS5100(config)#wireless
WS5100(config-wireless)#country-code us
WS5100(config-wireless)#radio add 1 00-A0-F8-CD-ED-EC
11bg ap300
WS5100(config-wireless)#radio 1 beacon-interval 100
WS5100(config-wireless)#radio 1 dtim-period 3
WS5100(config-wireless)#radio 1 bss 1 1
WS5100(config-wireless)#radio 1 speed 1 2 5p5 basic6 9
11 basic12 18 basic24 36 48 54
```

### When SpectraLink Wireless Telephones are configured for 802.11a mode:

```
WS5100>en
WS5100#conf t
WS5100(config)#wireless
WS5100(config-wireless)#country-code us
WS5100(config-wireless)#radio add 2 00-A0-F8-CD-ED-EC
11a ap300
WS5100(config-wireless)#radio 2 beacon-interval 100
WS5100(config-wireless)#radio 2 dtim-period 3
WS5100(config-wireless)#radio 2 bss 1 1
WS5100(config-wireless)#radio 2 speed basic6 9 basic12
18 basic24 36 48 54
```

### Channel Selection

You can specify the desired channel and power manually by using the following command.

#### For 802.11b/g radio:

```
WS5100(config-wireless)#radio 1 channel-power indoor 11
20
```

#### For 802.11a radio:

```
WS5100(config-wireless)#radio 2 channel-power indoor 36
17
```

For configuring power and data rate settings, please consult your facility’s RF site survey, designed for voice traffic, to determine if you have sufficient coverage to support all data rates. SpectraLink Wireless Telephones require the following minimum dBm reading to support the corresponding **Basic** data rate setting in the access point.

802.11 Radio Standard	Minimum Available Signal Strength (RSSI)	Maximum “Basic” Data Rate
802.11b	-70 dBm	1 Mb/s
	-60 dBm	11 Mb/s
802.11g	-63 dBm	6 Mb/s
	-47 dBm	54 Mb/s
802.11a	-60 dBm	6 Mb/s
	-45 dBm	54 Mb/s



For additional details on RF deployment please see the [Deploying Enterprise-Grade Wi-Fi Telephony](#) white paper and the [Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones](#).

## Configuring radio settings through the Web interface

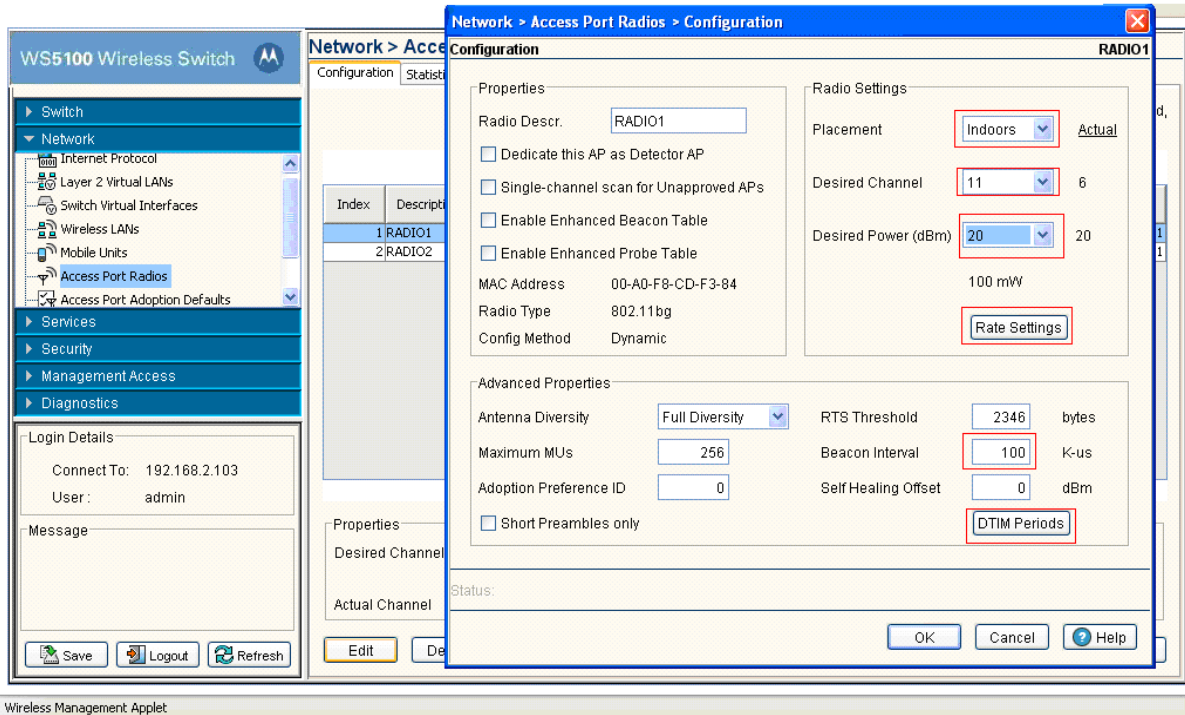
1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane, under **Network** click **Access Port Radios**.
3. In the **Configuration** screen, click the **Add** button.
4. In the **Add Radio** dialog box, set the **AP MAC Address** (same for 802.11a and 802.11bg).
5. Select the appropriate **Radio Setting** to match the radio setting on the SpectraLink Wireless Telephones:
  - a. Select the **802.11a** check box if the handsets are configured for 802.11a.
  - b. Select the **802.11bg** check box if the handsets are configured for 802.11g only or 802.11b & b/g mixed mode.
6. Click **OK**.

The screenshot displays the WS5100 Wireless Switch web interface. The left navigation pane shows the 'Network' section expanded to 'Access Port Radios'. The main content area is titled 'Network > Access Port Radios' and includes tabs for 'Configuration', 'Statistics', 'WLAN Assignment', 'WMM', and 'Bandwidth'. A modal dialog box titled 'Add Radio' is open, showing the following fields:

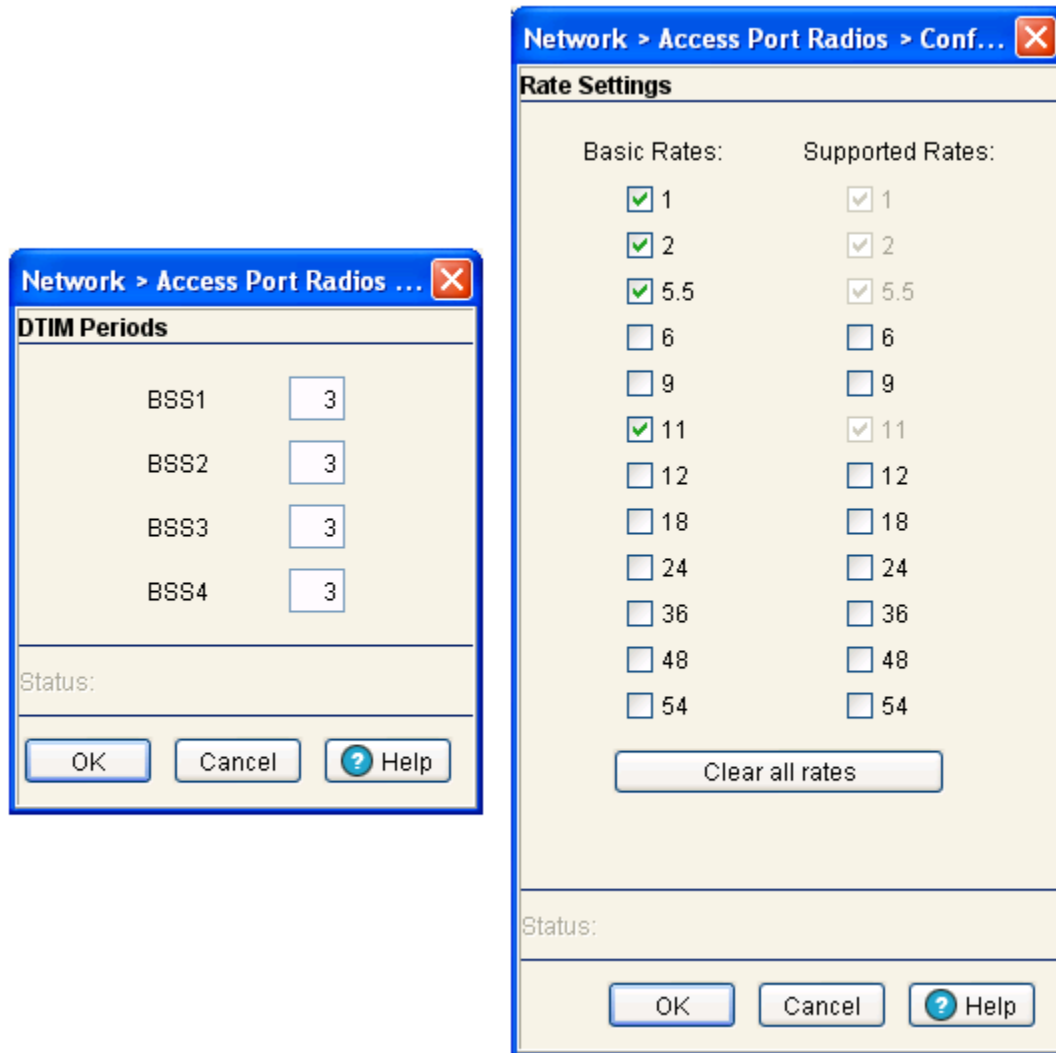
- AP MAC Address:** 00 - A0 - 18 - cd - f3 - 84
- Radio Settings:**
  - 802.11a (Radio Index: 1)
  - 802.11bg (Radio Index: )
- Status:** (empty)

Buttons for 'OK', 'Cancel', and 'Help' are visible at the bottom of the dialog. In the background, the 'Access Port Radios' configuration page shows a table with columns for Index, AP Address, MAC Address, State, and VLAN. The 'Add' button at the bottom of the page is highlighted with a red box.

7. Once the APs are adopted they should appear in the **Access Port Radios** screen in the **Configuration** tab.
8. Select the appropriate radio (**Radio1** for 802.11b/g or **Radio2** for 802.11a).
9. Click the **Edit** button.
10. In the **Configuration** dialog box, select the **Placement**, **Desired Channel**, **Desired Power** and **Beacon Interval** settings from the drop-down lists.



11. Click the **Rate Settings** button.
12. In the Rate settings dialog box, set the desired **Basic** and **Supported Rates**. Click **OK**.
13. Click the **DTIM Periods** button.
14. In the **DTIM Periods** dialog box, set each value to **3**. Click **OK**.



For configuring power and data rate settings, please consult your facility’s RF site survey, designed for voice traffic, to determine if you have sufficient coverage to support all data rates. SpectraLink Wireless Telephones require the following minimum dBm reading to support the corresponding **Basic** data rate setting in the access point.

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802.11b	-70 dBm	1 Mb/s
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	-47 dBm	54 Mb/s
802.11a	-60 dBm	6 Mb/s
	-45 dBm	54 Mb/s



For additional details on RF deployment please see the [Deploying Enterprise-Grade Wi-Fi Telephony](#) white paper and the [Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones](#).

## SSID, QoS and Security Settings

### Configuring SSID, QoS and security settings through the CLI

Configure the SSID, QoS and security (WPA-PSK) settings of the wireless switch using the following commands:

```
WS5100>en
WS5100#conf t
WS5100(config)#wireless
WS5100(config-wireless)#wlan 1 enable
WS5100(config-wireless)#wlan 1 ssid spectralink
WS5100(config-wireless)#wlan 1 qos svp enable
WS5100(config-wireless)#wlan 1 qos classification low
WS5100(config-wireless)#wlan 1 encryption-type tkip
WS5100(config-wireless)#wlan 1 dot11i phrase 0 12345678
```

To configure WPA2-PSK replace the last two lines in the above command sequence with the following:

```
WS5100(config-wireless)#wlan 1 encryption-type ccmp
WS5100(config-wireless)#wlan 1 dot11i phrase 0 12345678
```

## Configuring SSID, QoS and security settings through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane, under **Network** click **Wireless LANs**.
3. In the **Configuration** tab screen, select **WLAN1** and click the **Enable** button.
4. After enabling WLAN1 click the **Edit** button.

The screenshot shows the 'Network > Wireless LANs' configuration page. The table below represents the data shown in the interface:

Index	Enabled	ESSID	Description	VLAN(s)	Authentication	Encryption	Independent Mode	QoS Weight
1	✓	spectralink	WLAN1	1	None	TKIP	✗	1
2	✗	102	WLAN2	1	None	None	✗	1
3	✗	103	WLAN3	1	None	None	✗	1
4	✗	104	WLAN4	1	None	None	✗	1
5	✗	105	WLAN5	1	None	None	✗	1
6	✗	106	WLAN6	1	None	None	✗	1
7	✗	107	WLAN7	1	None	None	✗	1
8	✗	108	WLAN8	1	None	None	✗	1
9	✗	109	WLAN9	1	None	None	✗	1
10	✗	110	WLAN10	1	None	None	✗	1
11	✗	111	WLAN11	1	None	None	✗	1
12	✗	112	WLAN12	1	None	None	✗	1
13	✗	113	WLAN13	1	None	None	✗	1
14	✗	114	WLAN14	1	None	None	✗	1
15	✗	115	WLAN15	1	None	None	✗	1
16	✗	116	WLAN16	1	None	None	✗	1
17	✗	117	WLAN17	1	None	None	✗	1
18	✗	118	WLAN18	1	None	None	✗	1
19	✗	119	WLAN19	1	None	None	✗	1
20	✗	120	WLAN20	1	None	None	✗	1

At the bottom of the interface, there are buttons for 'Edit', 'Enable', 'Disable', and 'Export'. The 'Enable' button is highlighted, indicating the current action being performed on the selected WLAN1.

5. To configure SSID, enter **spectralink** in the **ESSID** field.
6. To configure QoS, select the **Enable SVP** checkbox. This will prioritize voice packets as instructed by the SVP protocol.
7. Select **Low** from the **Access Category** drop-down list. This will cause all non-voice packets to get lower priority.

**Network > Wireless LANs > Edit** WLAN1

**Edit**

**Configuration**

ESSID  Description

Independent Mode (AAP Only)

VLAN ID   Dynamic Assignment

**Authentication**

802.1X EAP

Kerberos

Hotspot

MAC Authentication

No Authentication

**Encryption**

WEP 64

WEP 128

KeyGuard

WPA/WPA2-TKIP

WPA2-CCMP

**Advanced**

Accounting Mode  MU to MU Traffic

Answer Broadcast ESS MU Idle Time  seconds

Use Voice Prioritization

Enable SVP MCast Addr 1

Secure Beacon MCast Addr 2

QoS Weight  NAC Mode

Status:

8. To configure security, in the **Encryption** section select the **WPA/WPA2-TKIP** check box.
9. Click the **Config** button. The dialog box shown below will appear.
10. In the **Key Settings** section, enter **12345678** under **ASCII Passphrase**.
11. Click **OK**.

