



VIEW Certified Configuration Guide

Motorola

RFS6000 Wireless Switch

May 2009 Edition 1725-36197-001 Version A

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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 8020/8030 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 RFS6000 Wireless Switch and the AP300 access point (AP) to best support SpectraLink 8020/8030 Wireless Telephones.

Manufacturer:	Motorola		
Approved products:	RFS6000 Wireless S	Switch with AP300 [†]	
RF technology:	802.11a/b/g		
Radio:	2.4 GHz (802.11b/g)	, 5 GHz (802.11a)	
Security:	WPA-PSK, WPA2-PSK		
AP and WLC software version certified:	3.3.1.0-003R		
SpectraLink handset models certified: **	e340/h340/i640 8020/8030 [†]		/8030 [†]
SpectraLink handset software certified:	89.135 or greater	greater 122.021 or greater	
SpectraLink radio mode:	802.11b	802.11b 802.11a	
Maximum telephone calls tested per AP:	12 12 12*		12*
Network topology:	Switched Ethernet (recommended)		

Certified Product Summary

[†] Denotes products directly used in VIEW Certification testing.

* 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 derivates 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 <u>http://support.symbol.com/support/product/softwaredownloads.do</u>. Upgrading the RFS6000 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

- 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:

RFS6000>en
RFS6000#upgrade
tftp://TFTP_SERVER_IP_ADDR/RFS6000_FIRMWARE_FILENAME

b. For FTP, issue the following commands:

RFS6000>en RFS6000#upgrade ftp://FTP_USERNAME:FTP_PASSWD@FTP_SERVER_IP_ADDR/ _FIRMWARE_FILENAME

3. After the upgrade is successful issue the following command:

RFS6000#reload

Installing firmware through the Web interface

- 1. Open the RFS6000 applet by entering the IP address of the wireless switch: <u>http://192.168.2.103</u>
- 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 RFS6000 firmware image filename.
- 6. At **IP Address**, enter the TFTP server IP address.
- 7. Click the **Do Update** button.
- **8.** After the RFS6000 Wireless Switch performs the upgrade, navigate to the **Switch** window.

	Switch > Firmwa	e				
Switch						Image Failover is enabled. Use 'Global Settings' to disable it.
- Ports			Sh	ow Filtering Option	<u>s</u>	
A Configurations	Image	Version	Current Boot	Next Boot	Built Time	Install Time
Connigatations	Primary	3.3.0.0-026R	×	×	Sat Dec 06 17:10:35 2008 GMT-08:00	Tue Jan 29 16:43:26 2008 GMT-08:00
Filliware	Secondary	3.3.1.0-003R	~	~	Thu Feb 05 20:48:28 2009 GMT-08:00	Tue Feb 10 09:57:54 2009 GMT-08:00
File Management			Switch S.	innuu ann à Undat-		
Automatic opuate			Switch	inniware > opuae		
Marm Log			Update			
			From	Server 🔻		
			File	RFS6000-3.	3.1.0-003R.img	
			Using	TETP V	Port 69	
			in a la			
h. Nebusili			IP Addi	ess 192.168	. 2 . 100	
P Network			UserID			
> Services			Passw	ord		
Security	Patch		Path			
Management Access		Patch Name			Ve	ersion
Diagnostics						
Login Details	1		Status:			
ConnectTo: 192.168.49.14				Do Update	Close 📀 Help	
User: admin						
Message						
-						
Save 🛃 Logout 🔀 Refresh	Edit				Global Settings Update Firm	nware Remove Patch 📀 Help

9. In the navigation pane under Switch, click Configurations.

	Switch
	Configuration Switch Statistics
Ewitch Corfigurations Firmware FirMagement Automatic Update Just I Log Licenses	System Name RF56000 Location Contact Uptime 0 hours, 26 minutes and 31 seconds Firmware 3.3.1.0-03R
h. Nebush	Copyright 2006-2009 Motorola, Inc.
Network	AF LIGISS 40 APL ligance
Services	And Lucines
Security	Date (MM/DD/YYYY) 04/12/2009
Management Access	Time (HH:MM:SS) 21:32:46
Diagnostics	Time Zone Etc/OMT-8 😽 🖃
Login Details	Country United States-us
ConnectTo: 192.168.49.14	
User: admin	Restart Shutdown
Message	
Save Save Cogout Refresh	Show Dashboard Reset Password Apply Revert O Help

10. Click the **Restart** button to reboot the switch.

Installing the AP license through the CLI

For the RFS6000 to adopt AP300s, a license has to be installed. Obtain the license key and then install based on the following steps:

```
RFS6000>en
RFS6000#conf t
RFS6000(config)#license AP <LICENSE_KEY>
```

Installing the AP license through the Web interface

- 1. Open the RFS6000 applet by entering the IP address of the wireless switch: <u>http://192.168.2.103</u>
- 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.

	Switch > Licenses					
AFS6000 AF Switch						
- Switch	Install License					
Ports						
Configurations		License Key	faafaafaabaabaaabaaaabcdefabco	lefabcdefadfadfadfadfadfadfeeadfadbd	adfadfadfda	
- G Firmware		Footure Nome	AD	Inc	tall	
File Management		reature Name	Ar	110	teni	
- Alarm Log		Serial Number	7295520400006			
Licenses						
	Feature Licenses		R			
	Feature Name 🔉		License Count	License Usage	License Key	
	AP		48		1 26e1274e d7e6e2ce 4dff2311 954c841c 8dbe0	i3a 3dc20d7f be31
Network						
Services						
Security						
Management Access						
► Diagnostics	r l					
Login Details						
Connect To: 192.168.49.14						
User: admin						
Message						
Management Access Diagnostics Cogni Details Connect To: 192.168.49.14 User: admin Message						

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 or 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:

RFS6000>en RFS6000#conf t RFS6000 (config)#wireless RFS6000 (config-wireless)#country-code us RFS6000 (config-wireless)#radio add 1 00-A0-F8-CD-ED-EC 11bg ap300 RFS6000 (config-wireless)#radio 1 beacon-interval 100 RFS6000 (config-wireless)#radio 1 dtim-period 3 RFS6000 (config-wireless)#radio 1 bss 1 1 RFS6000 (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:

RFS6000>en RFS6000#conf t RFS6000 (config)#wireless RFS6000 (config-wireless)#country-code us RFS6000 (config-wireless)#radio add 1 00-A0-F8-CD-ED-EC 11bg ap300 RFS6000 (config-wireless)#radio 1 beacon-interval 100 RFS6000 (config-wireless)#radio 1 dtim-period 3 RFS6000 (config-wireless)#radio 1 bss 1 1 RFS6000 (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:

```
RFS6000>en
RFS6000#conf t
RFS6000 (config)#wireless
RFS6000 (config-wireless)#country-code us
RFS6000 (config-wireless)#radio add 2 00-A0-F8-CD-ED-EC
11a ap300
RFS6000 (config-wireless)#radio 2 beacon-interval 100
RFS6000 (config-wireless)#radio 2 dtim-period 3
RFS6000 (config-wireless)#radio 2 bss 1 1
RFS6000 (config-wireless)#radio 2 speed basic6 9 basic12
18 basic24 36 48 54
```

Channel selection

You can specify the desired channel manually by using the following commands.

For 802.11b/g radio:

RFS6000(config-wireless)#radio 1 channel-power indoor 11 20

For 802.11a radio:

RFS6000(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
902 11b	-70 dBm	1 Mb/s
002.110	-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 <u>Deploying</u> <u>Enterprise-Grade Wi-Fi Telephony</u> white paper and the <u>Best</u> <u>Practices Guide for Deploying SpectraLink 8020/8030 Wireless</u> <u>Telephones</u>.

Configuring radio settings through the Web interface

- 1. Open the RFS6000 applet by entering the IP address of the wireless switch: <u>http://192.168.2.103</u>
- 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.

	Network > Access Port Radios
RESOLUTION RESULT	Configuration Statistics WLAN Assignment WMM Bandwidth
Switch Network	Unconfigured radios are automatically adopted, use "Global Settings" to change this option.
Horemet Protocol 문화 Layer 2 Virtual LANs Switch Virtual Interfaces 관광 Wireless LANs 아이스테트 Units 아이스테트 Units 아이스슈스 Access Port Radios Services Security	Network > Access Port Radios > Add Radio I of 1 Go > >> Index C Add Radio AP AP MAC Address 00 - A0 - f8 - cd - f3 - 84 Radio Settings Ø 802.11a Radio Index 1 802.11bg Radio Index
Management Access Diagnostics Login Details Connect To: 192.168.2.103 User: admin	Status: OK Cancel @ Help 1 of 1 loaded.
Message	Properties Desired Channel Desired Power (dBm) Placement
	Actual Channel Actual Power Last Adopted
Save 🛃 Logout 🔀 Refresh	Edit Delete Add Tools > Global Settings @ Help
Wireless Management Applet	

- 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.

	Network > Access Port Radios > Configuration		_
RESECTO RE Switch	Network > Acce	RADIO1	
RFS6000 RF Switch Image: Constraint of the system Switch Image: Constraint of the system Network Image: Constraint of the system Switch Virtual Interfaces Image: Constraint of the system Switch Virtual Interfaces Image: Constraint of the system Writeless LANs Image: Constraint of the system Mobile Units Image: Constraint of the system Services Security Management Access Image: Constraint of the system	Network > Access Port Radios > Configuration Network > Acce Configuration Configuration Statist Properties Radio Descr. Radio Descr. Dedicate this AP as Detector AP Single-channel scan for Unapproved APs Enable Enhanced Beacon Table MAC Address 00-A0-F8-CD-F3-84 Radio Type 802.11bg Config Method Dynamic	RADIO1 Actual 6 20 1 1	
► Diagnostics -Login Details Connect To: 192.168.2.103 User : admin Message Message Save Successful Contemporation Statements	Properties Adoption Preference ID 0 Self Healing Offset 0 Properties Short Preambles only DTIM Period Actual Channel Status: 0K Cancel	bytes K-us dBm 3]	

- 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.

	Network > Access F	Port Radios > Conf 🚺
	Rate Settings	
	Basic Rates:	Supported Rates:
	v 1	☑ 1
	2	2
work > Access Port Radios 🔀	☑ 5.5	✓ 5.5
M Periods	6	6
BSS1 3	9	9
	I 1	V 11
BSS2 3	12	12
BSS3 3	🗖 18	1 8
	24	24
8884 3	36	36
	48	4 8
ь. 	54	54
K Cancel 🕢 Help	Clea	r all rates
	Status:	
	ОК	Cancel 📀 Help

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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002.110	-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 <u>Deploying</u> <u>Enterprise-Grade Wi-Fi Telephony</u> white paper and the <u>Best</u> <u>Practices Guide for Deploying SpectraLink 8020/8030 Wireless</u> <u>Telephones</u>.

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:

```
RFS6000>en
RFS6000#conf t
RFS6000(config)#wireless
RFS6000(config-wireless)#wlan 1 enable
RFS6000(config-wireless)#wlan 1 ssid spectralink
RFS6000(config-wireless)#wlan 1 qos svp enable
RFS6000(config-wireless)#wlan 1 qos classification low
RFS6000(config-wireless)#wlan 1 encryption-type tkip
RFS6000(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:

RFS6000(config-wireless)#wlan 1 encryption-type ccmp RFS6000(config-wireless)#wlan 1 dot11i phrase 0 12345678

Configuring SSID, QoS and security settings through the Web interface

- 1. Open the RFS6000 applet by entering the IP address of the wireless switch: <u>http://192.168.2.103</u>
- 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.

- 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		×
Edit		WLAN1
Configuration ESSID spectralink	, Only)	Description WLAN1
VLAN ID 1)ynamic Assignment]	
Authentication	Encr	yption
O 802.1X EAP	infig	VEP 64 Config
Kerberos Co Hotspot	unfig	VEP 128 Config
MAC Authentication		
No Authentication		VPAWPA2-TKIP VPA2-CCMP Config
Advanced		
Accounting Mode Off 💌	MU to MU Traffic	Allow Packets 💌
Answer Broadcast ESS	MU Idle Time	1800 seconds
Use Voice Prioritization	Access Category	Low
🗹 Enable SVP	MCast Addr 1	00 - 00 - 00 - 00 - 00 - 00
Secure Beacon	MCast Addr 2	00 - 00 - 00 - 00 - 00 - 00
QOS Weight	NAC Mode	None
Status:		
Radius Syslog		OK Cancel 🥑 Help

- 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**.

Network > Wireless LANs > Edit > WPA/WPA2-TKIP/CCMP
WPA/WPA2-TKIP/CCMP
Broadcast Key Rotation Update broadcast keys every 7200 (1800-86400) seconds
Key Settings
ASCII Passphrase
Enter 8-63 ASCII characters
O 256-bit key
Enter 16 hex characters in each field
Fast Roaming (802.1x only)
PMK Caching Opportunistic Key Caching Pre-Authentication
Status:
OK Cancel 🕗 Help

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