Setting a Wireless Network using Siretta Wi-Fi Router

This Application Note is designed to assist customers who are looking to create a Wireless Network using Siretta Wi-Fi routers.
Siretta Wireless routers support standard (IEEE802.11b/g/n) Wi-Fi technologies.

Below is a list of Siretta Wi-Fi Routers :-
• QUARTZ-W22-UMTS(EU)
• QUARTZ-W22-LTE(EU)
• .QUARTZ-W22-LTE(EU)
• QUARTZ-LITE-W21-UMTS(EU)
• QUARTZ-LITE-W21-LTE(EU)

This guide is created by using QUARTZ- W22-UMTS (EU). Similar procedure can be used to create a Wi-Fi network with other models.

Requirements: -

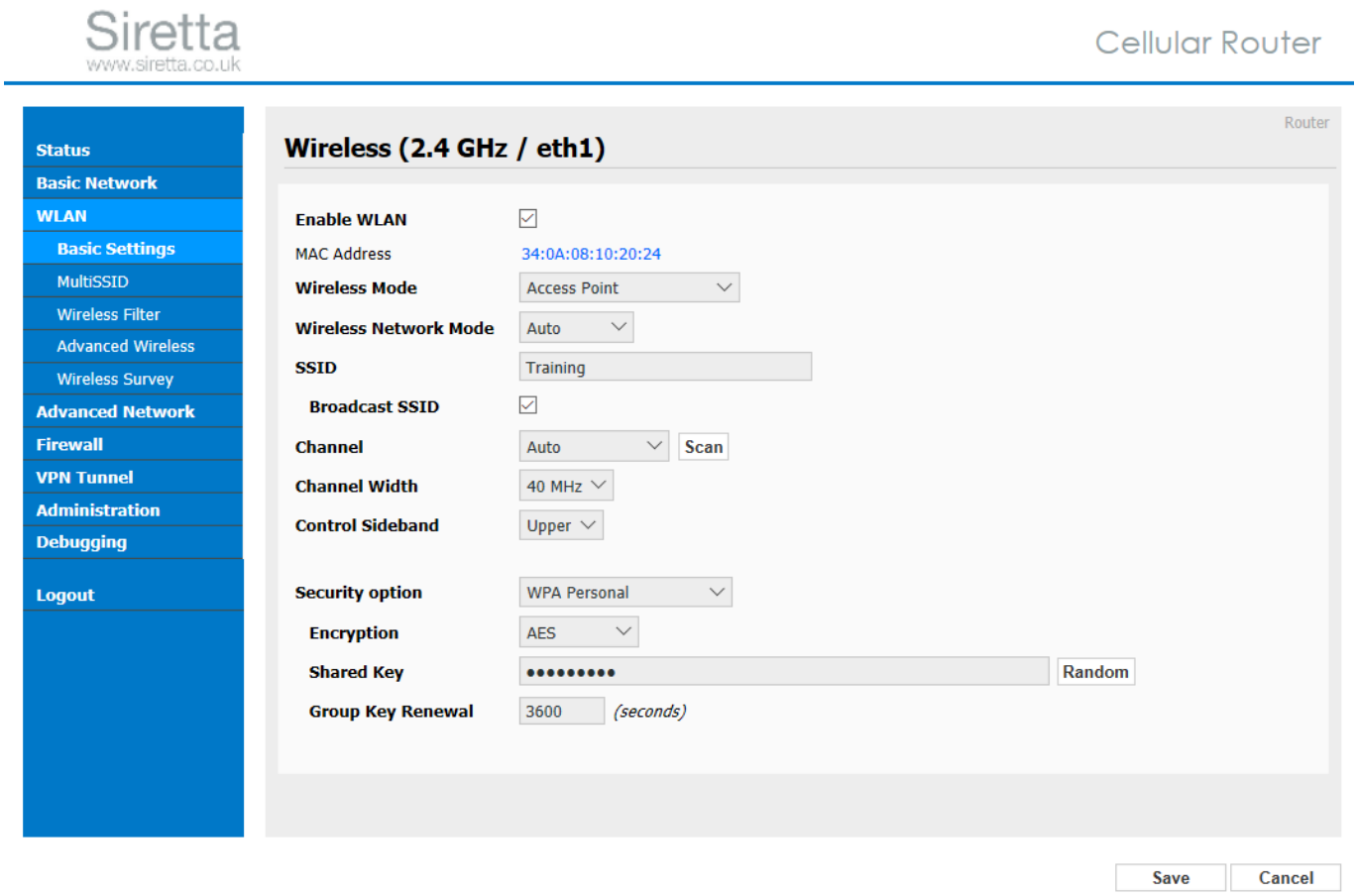
• Router Quick Start Guide - https://www.siretta.com/wp-content/uploads/2019/08/Siretta-Routers-Quick-Start-Guide-Rev-1.0.pdf

Follow below steps to create Wireless Network.

1. Use Router Quick Start Guide to reach to the page below.

2. Click WLAN tab from router webpage (GUI)
3. Click Basic Settings.
4. Check “Enable WLAN” box
5. Select “Access Point” in Wireless Mode (Other available options are AP+WDS, Wireless Client, Wireless Ethernet Bridge or WDS)
6. Select “Auto” in Wireless Network Mode
7. Type your chosen network name after SSID (for this guide “Training” used as SSID)
8. Check Broadcast SSID box.
9. Select Auto in Channel
10. Use Channel bandwidth of 40MHz
11. Select “Upper” in Control Sideband.
12. Select Security option “WPA Personal”
13. Use Encryption “AES”
14. Shared Key. This is the Password, “Training” used for this application note.
15. Leave Group Key Renewal as default (3600) seconds
16. Click Save.

17. Wait for the router to complete reboot cycle.
18. Once reboot is completed, repeat step 1 to 3 above.
19. You will be presented with a page as below.



20. Wi-Fi network “Training” now is complete.

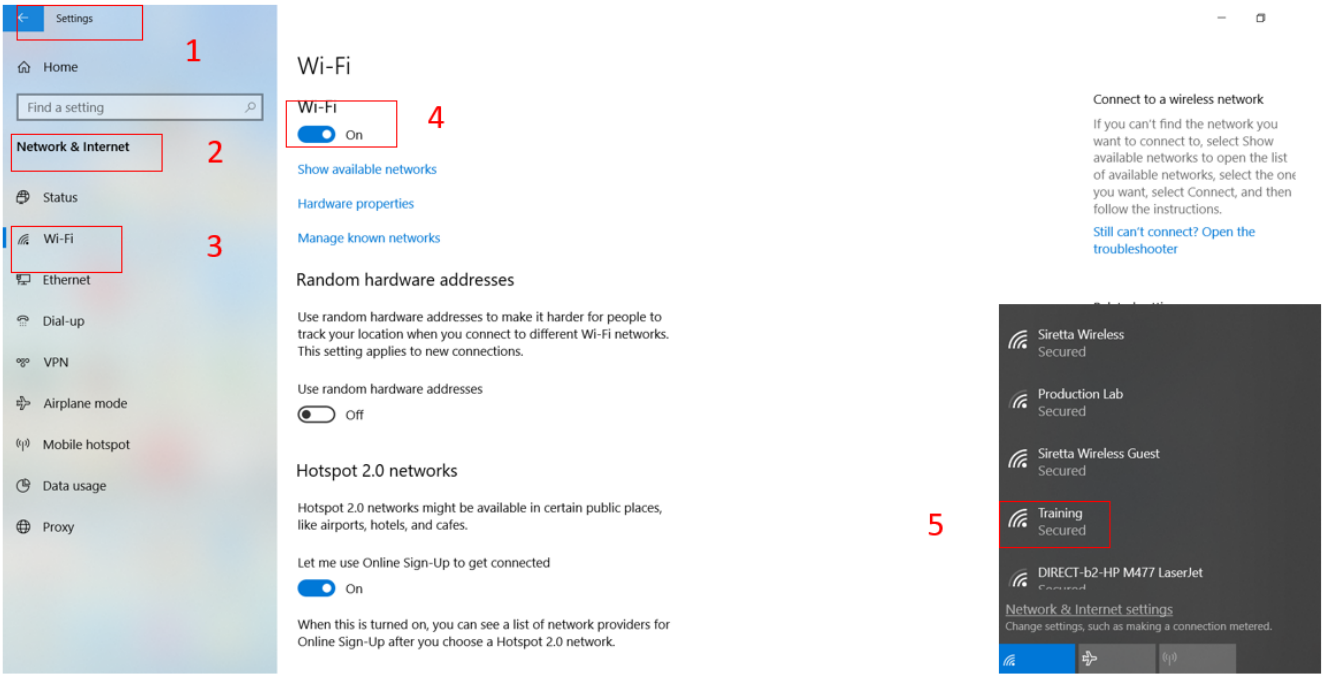
Note: Up to 255 devices can be connected to a network.
WLAN Green LED will stay ON when WLAN is enabled.

Example I: Connecting a Windows 10 Laptop to a Siretta Wi-Fi Network.

1. Open settings page on Windows 10 Laptop.
2. Click Network & Internet Option.
3. Select Wi-Fi Tab.
4. Switch Wi-Fi Tab ON.

5. Click Show available networks.
6. Choose Training from the list.
7. Enter password when prompted (“Training” used for this guide).
8. Click Connect Tab.
9. You are now connected to the Wi-Fi network.

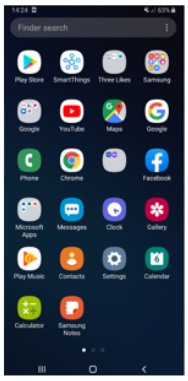
Screenshot below shows the simplified image of settings on Windows 10 PC with



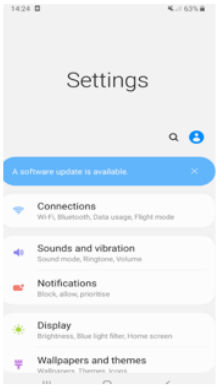
Example II: Connecting an Android Mobile Device to a Siretta Wi-Fi Network

1. Follow Step 1 to 6 of the screenshot below.

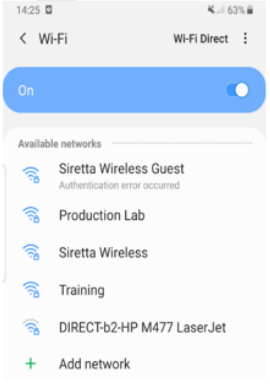
1. Access device home page



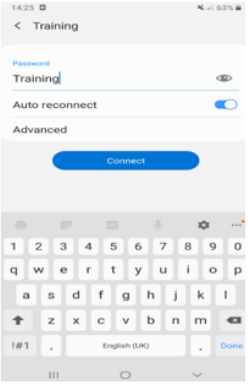
2. Navigate to Settings



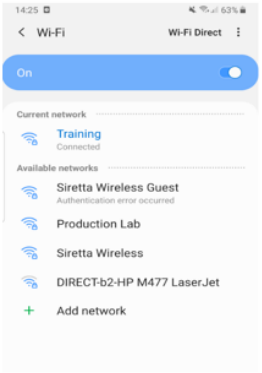
3. Enable Wi-Fi



4. Select Training & Enter Password



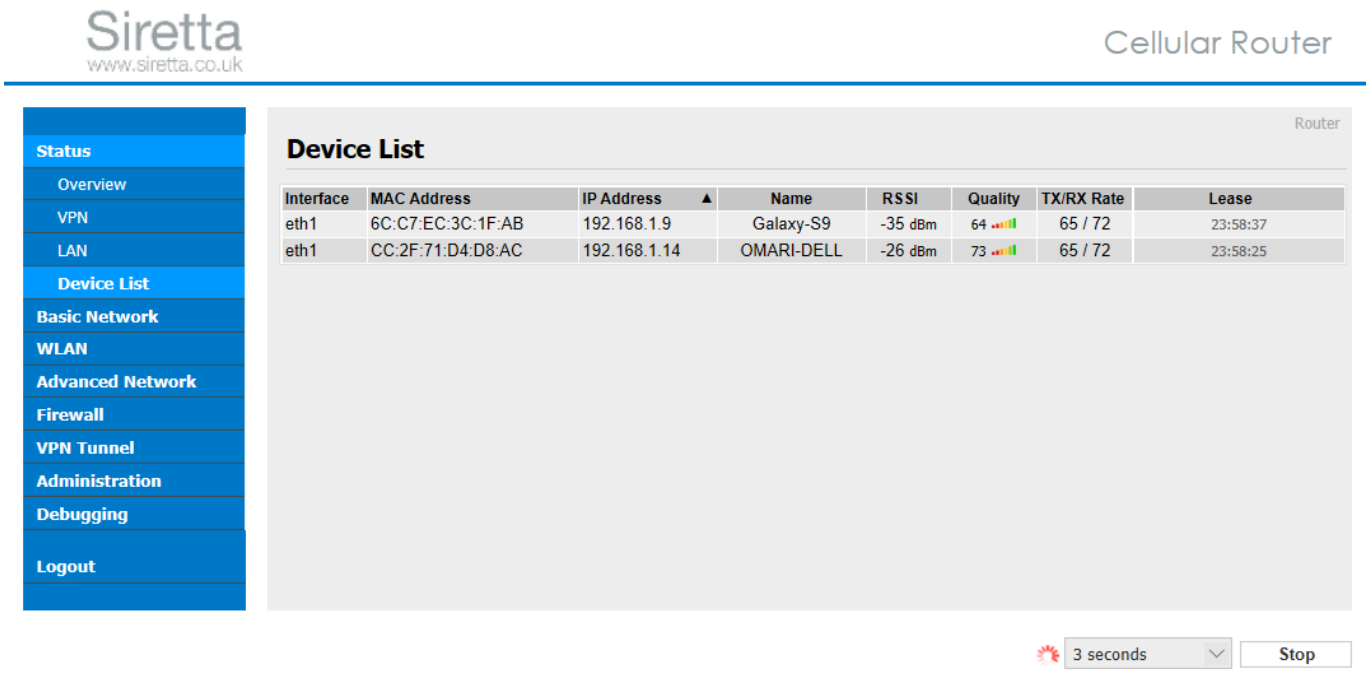
6. Click Connect



2. Mobile device is now connected to a Wi-Fi Network (Training).

How to check connected devices to a Siretta Wi-Fi Router.
Steps for checking connected devices: -

1. Access router web page (GUI)
2. Navigate to the device list, you will be presented with the screenshot below.



Interface	MAC Address	IP Address ▲	Name	RSSI	Quality	TX/RX Rate	Lease
eth1	6C:C7:EC:3C:1F:AB	192.168.1.9	Galaxy-S9	-35 dBm	64	65 / 72	23:58:37
eth1	CC:2F:71:D4:D8:AC	192.168.1.14	OMARI-DELL	-26 dBm	73	65 / 72	23:58:25

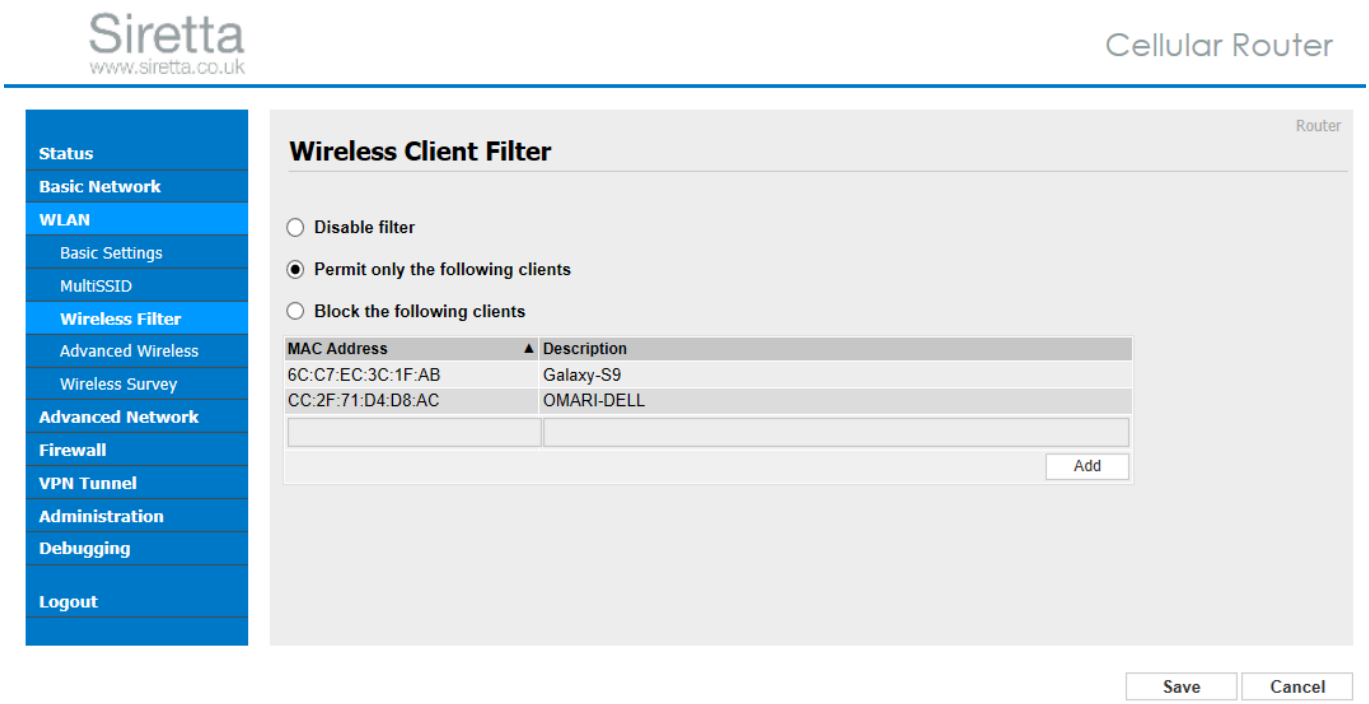
3. Screenshot above shows connected devices with their MAC Address, IP address, Name, RSSI, Signal Quality Indicator and TX/RX Rate displayed.

How to control access to a Siretta Wi-Fi Router Network
Wireless Client Filter option from the Siretta Wi-Fi Router will allow admin to control access to a Wi-Fi network by

restricting or allowing connection by using MAC addresses of the connected devices.

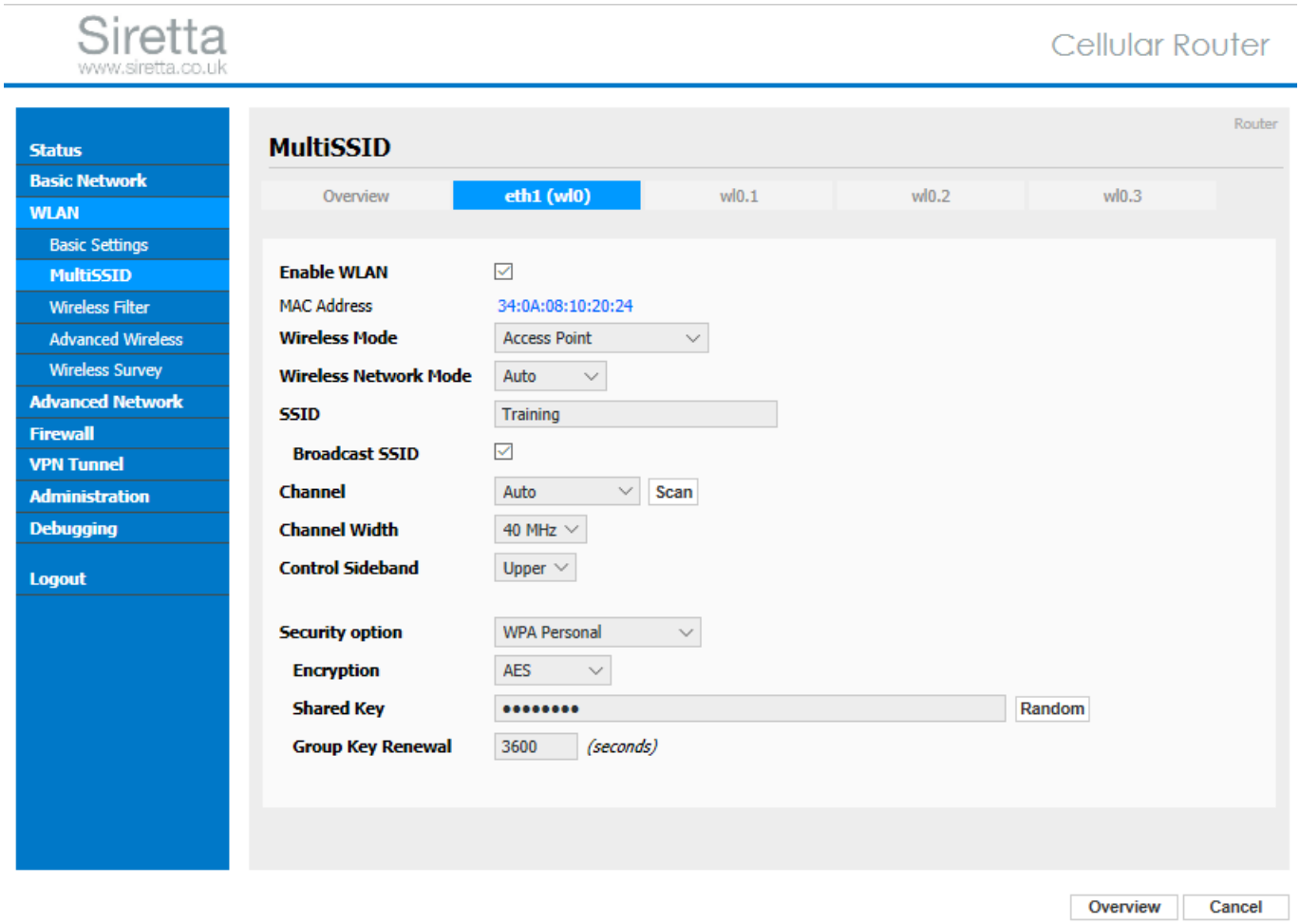
There are three Modes for Client Filter: -
• Disable Filter – Any device can be connect to a Wi-Fi Network using user name and password (“Training”, “Training”).
• Permit Only the Following Client – Only Clients with defined MAC address (See step 2 above) will be allowed to connect to a network
• Block the following client - Any device can connect except for the listed MAC addresses.

Example below shows only Galaxy-S9 and OMARI-DELL are allowed to connect to the “Training” Wi-Fi network.

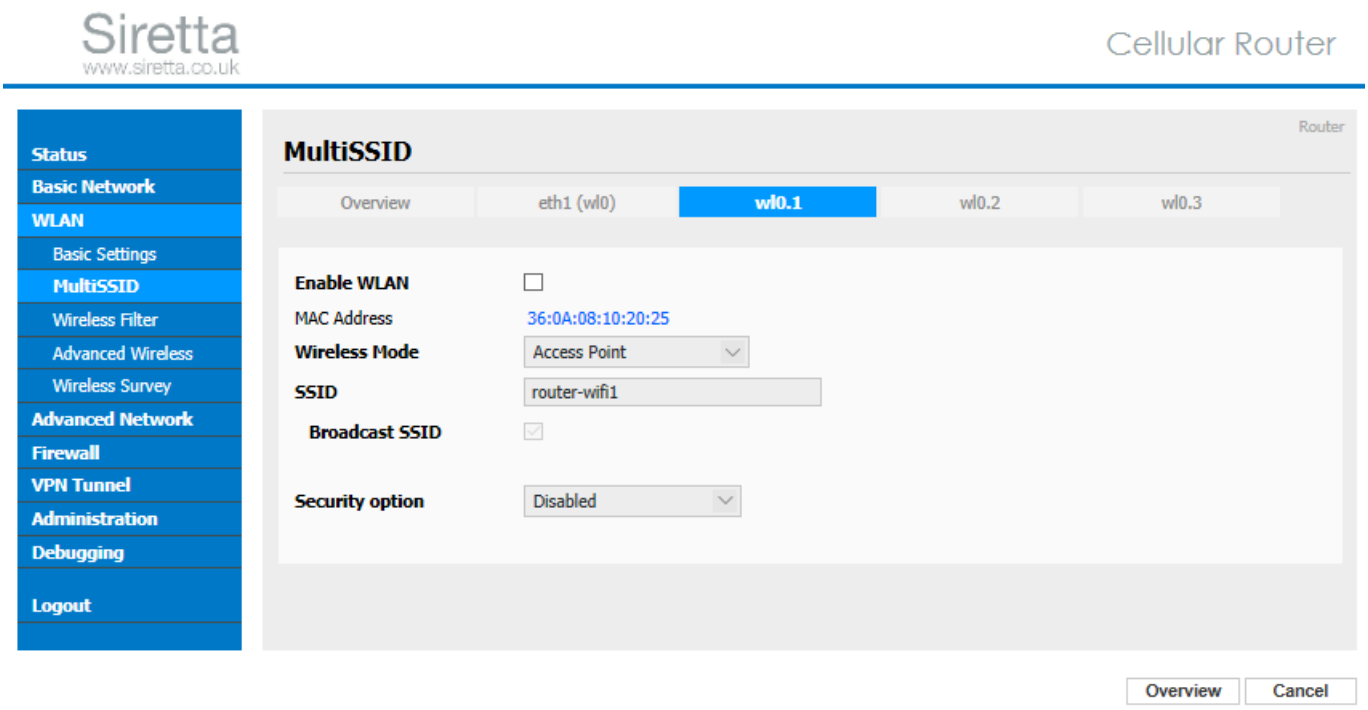


Setting Multiple Wi-Fi Networks using Siretta Wi-Fi Router
Up to 4 x Wi-Fi networks can be configured on the same router using the similar procedure as above with different network names. Screenshots below show MultiSSID (Training and router-Wi-Fi (1-3)).

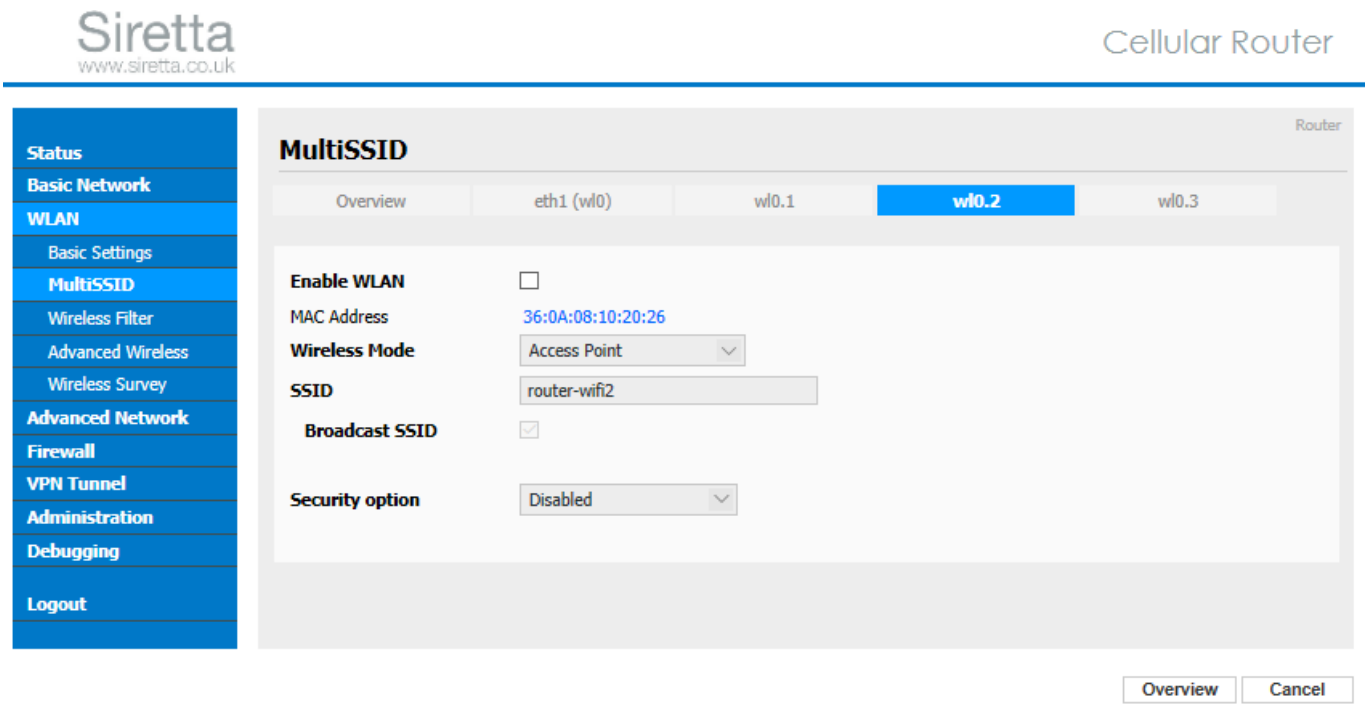
1. Wireless Network 1 (Training – Enabled).



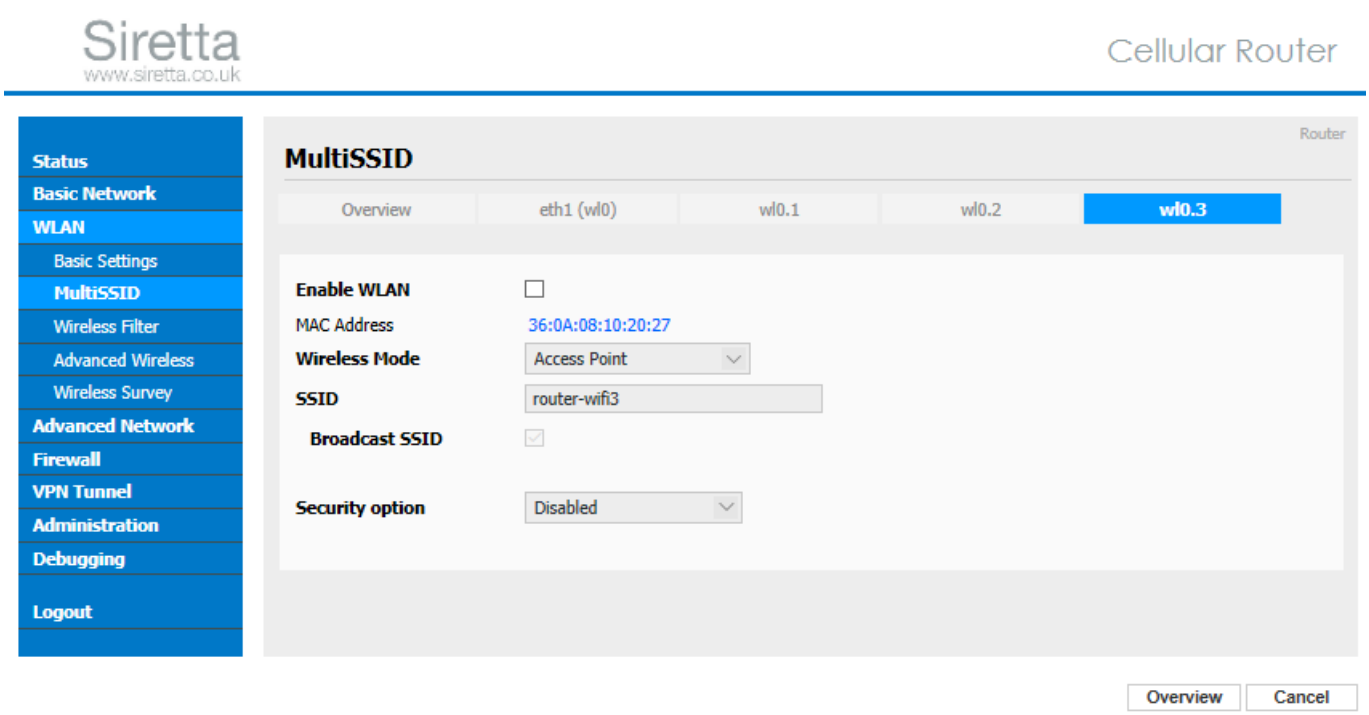
2. Wireless Network 2 (router-wifi1 – Disabled).



3. Wireless Network 3 (router-wifi2 – Disabled).

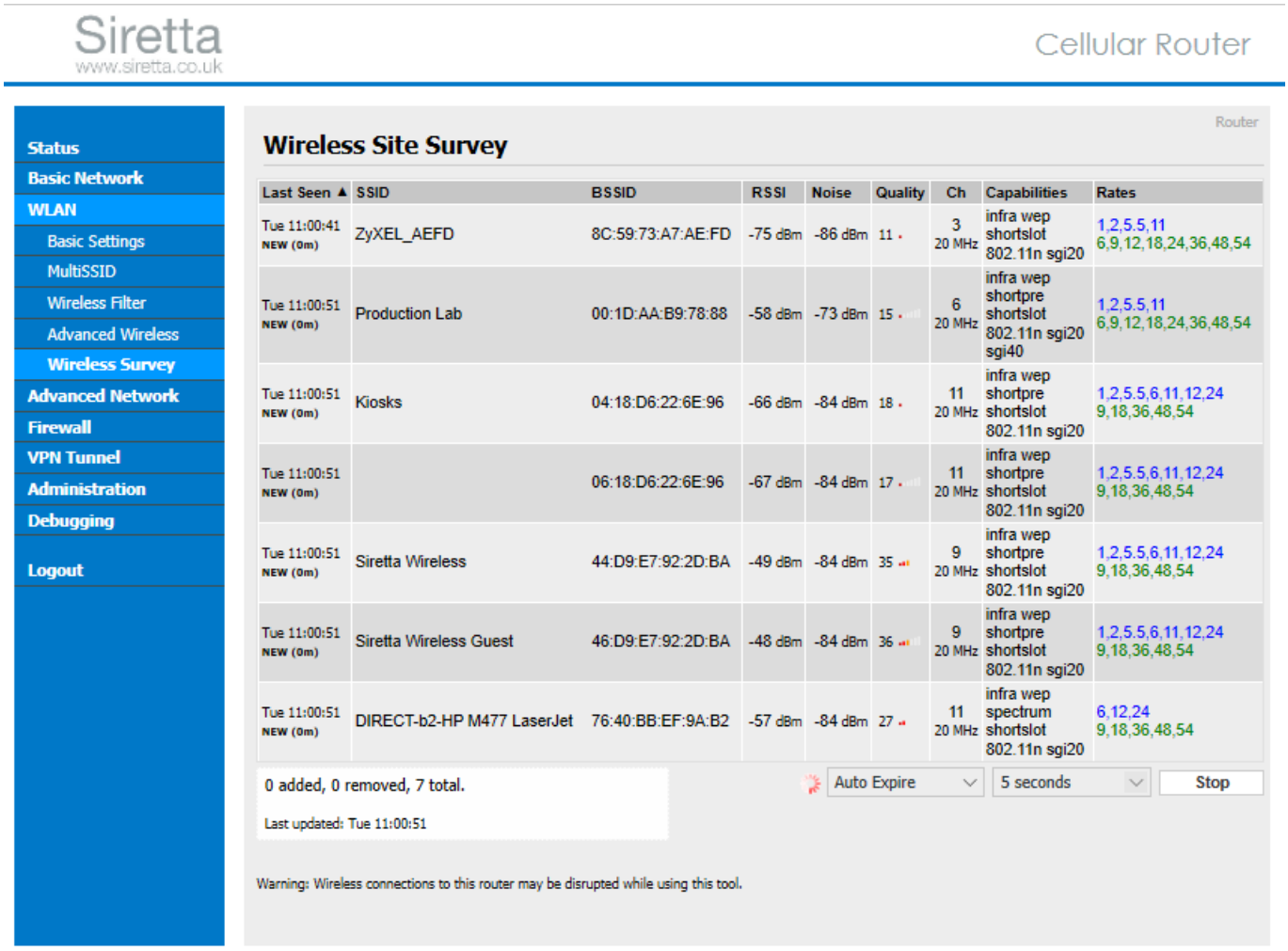


4. Wireless Network 4 (router-wifi3 – Disabled).



Surveying Neighbourhood Wi-Fi Networks using Siretta Wi-Fi Router

Wireless Survey option will allow admin to see the parameters (i.e. RSSI, Noise, Signal Quality and used channel) of other Wi-Fi Networks within range. When Wireless Survey is initiated, it will return results at specified time as seen below.



This will help customers during Wi-Fi network configuration in to avoid interferences from Wi-Fi Networks within range.

Wireless Advanced Settings
The Wi-fi advanced settings can be done by navigating to: -

1. WLAN
2. Advanced Wireless
3. Enter the parameters per your network requirements.
4. Below is the screenshot showing Wireless Advanced Settings

Siretta
www.siretta.co.uk

Cellular Router

- Status
- Basic Network
- WLAN
  - Basic Settings
  - MultiSSID
  - Wireless Filter
  - Advanced Wireless
  - Wireless Survey
- Advanced Network
- Firewall
- VPN Tunnel
- Administration
- Debugging
- Logout

Router

Wireless Advanced Settings(2.4 GHz / eth1)

Afterburner	Enabled	
AP Isolation	Disabled *	
Authentication Type	Auto *	
Basic Rate	Default *	
Beacon Interval	100	(range: 1 - 65535; Default: 100)
CTS Protection Mode	Disabled *	
Regulatory Mode	Disabled *	
Country / Region	UNITED KINGDOM	
Bluetooth Coexistence	Disabled *	
Distance / ACK Timing	0	meters (range: 0 - 99999; Default: 0)
DTIM Interval	1	(range: 1 - 255; Default: 1)
Fragmentation Threshold	2346	(range: 256 - 2346; Default: 2346)
Frame Burst	Disabled *	
Maximum Clients	128	(range: 1 - 255; Default: 128)
Multicast Rate	Auto *	
Preamble	Long *	
802.11n Preamble	Mixed Mode *	
Overlapping BSS Coexistence	Disabled *	
RTS Threshold	2347	(range: 0 - 2347; Default: 2347)
Receive Antenna	Auto *	
Transmit Antenna	Auto *	
Transmit Power	0	mW (range: 0 - 400, actual max depends on Country selected; use 0 for hardware default)
Transmission Rate	Auto *	
Interference Mitigation	None *	
WMM	Enabled	
No ACK	Disabled *	
APSD Mode	Disabled	
Wireless Multicast Forwarding	Disabled *	

The default settings are indicated with an asterisk* symbol .

Definition of terms used in Wi-Fi Advanced Settings:
Afterburner - (Auto, Enabled, Disabled*) - Speedbooster
AP Isolation - (Disabled*, Enabled) - Disabled option client devices will be able to communicate with the router but not with each other in the network. Enabled Option will allow Clients to communicate with the router and with each other in the network.
Authentication Type - (Auto*) - Auto allows either Open System or Shared Key authentication to be used.

Basic Rate - (Default*,1-2 Mbps, All) - Default setting will ensure maximum compatibility with all devices, select 1-2Mbps for compatibility with older Wireless-B devices or All to enable all data rates.
Beacon Interval-(range: 1 - 65535; Default: 100) - Frequency of the beacon in Milliseconds. (Time taken for the packet to be broadcasted from the router to the clients in order to maintain connection)
CTS Protection Mode - (Disabled*, Auto) - Is the settings that allows multiple devices to connect to a router wi-fi network.
Regulatory Mode - (Disabled*,802.11d,802.11h) – Option to choose country specific regulatory domains either "d" or "h" otherwise set to default *.
Country / Region - Choose from drop down menu country your current operating this device.
Bluetooth Coexistence- (Disabled*, Enabled, Preemption) - Feature that enable router to share /limit use of the same spectrum (2.4GHz) for communication with Bluetooth device.
Distance / ACK Timing - (range: 0 - 99999; Default: 0) meters - Distance Limitations for sent data packet without retransmission.
DTIM Interval - (range: 1 - 255; Default: 1)- Beacon Interval
Fragmentation Threshold -(range: 256 - 2346; Default: 2346)- Work on the same way as MTU in Ethernet.
Frame Burst - (Disabled*, Enabled)- Setting for packet bursting.
Maximum Clients - (range: 1 - 255; Default: 128)- Number of clients that can be added to the Wi-Fi router network.
Multicast Rate-(Choose from Auto*,1Mbps,2Mbps,5.5Mbps,6Mbps,9Mbps,11Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps, 54Mbps)- Rate for simultaneously transfer of packets to multiple clients.
Preamble - (Long*, Short)- Adds additional data header strings to help the Wi-Fi to check transmission errors (Short add less data which is much faster, Long add more data which is better for error checking).
802.11n Preamble - (Auto, Mixed Mode*, Green Field, GF-BRCM)- Setting compatibility of wi-fi router with other 802.11 devices during transmitting.
Overlapping BSS Coexistence - (Disabled*, Enabled) When enabled the use of channel width of 40MHz will drop down to 20MHz when interference is detected.
RTS Threshold - (range: 0 - 2347; Default: 2347)- RTS stands for "Request to send". This function asks clients for permission to send the next data packet.
Receive Antenna - (Auto*, A, B) - Dedication of one or other antenna (Applies to router with 2xWi-Fi antenna) to transmit /or receive signals.
Transmit Antenna - (Auto*, A, B)- Dedication of one or other antenna (Applies to router with 2xWi-Fi antenna) to transmit /or receive signals.
Transmit Power (mW)- (range: 0 - 400, actual max depends on Country selected; use 0 for hardware default)- Transmissions power.

Transmission Rate - (Auto*,1Mbps,2Mbps,5.5Mbps,6Mbps,9Mbps,11Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps, 54Mbps) - The rate for data transmission should be set depending on the speed of your wireless network.
Interference Mitigation - (None*, Non-WLAN, WLAN Manual, WLAN Auto, WLAN Auto with Noise Reduction)
None- No other electronic devices around the router that may cause an interference.
Non-WLAN - if the primary source of interference in your area are non-WLAN electronic devices, such as cordless phones.
WLAN - if the primary source of interference in your area are WLAN electronic devices.
WLAN Manual activates interference mitigation against other Wireless LAN devices.
WLAN Auto is similar to WLAN Manual above.
WMM - (Auto*, Disable, Enabled)- Is a Wi-Fi certification based on the IEEE 802.11e standard.
No ACK - (Disabled*, Enabled)- When Enabled Frames sent are not acknowledged. When Disabled Frames will be acknowledged.
APSD Mode - (Disabled, Enabled*)- Automatic Power Save Delivery is a power management method where data rates are roughly the same in both directions.
Wireless Multicast Forwarding - (Disabled*, Enabled) - Is the way of forwarding traffic on the wireless network.
When Enabled router will be transmitting traffics only to the targeted members of the multicast.
* Default.

For captive portal configuration visit the following link https://www.siretta.com/2019/03/configuring-captive-portal-on-siretta-routers/

More information about routers can be found from the following link https://www.siretta.com/products/industrial-routers/

If your experiencing any difficulties or need further assistance on setting Wi-Fi network using Siretta Router, please email support at support@siretta.co.uk