

# **WiFi Explorer Pro 3**

## **"The Definitive User Guide"**

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Published by Bowden Networks Ltd (UK)



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# Introduction

No Screenshots.



# Chapter 1 - WiFi Explorer Pro 3 Product Overview

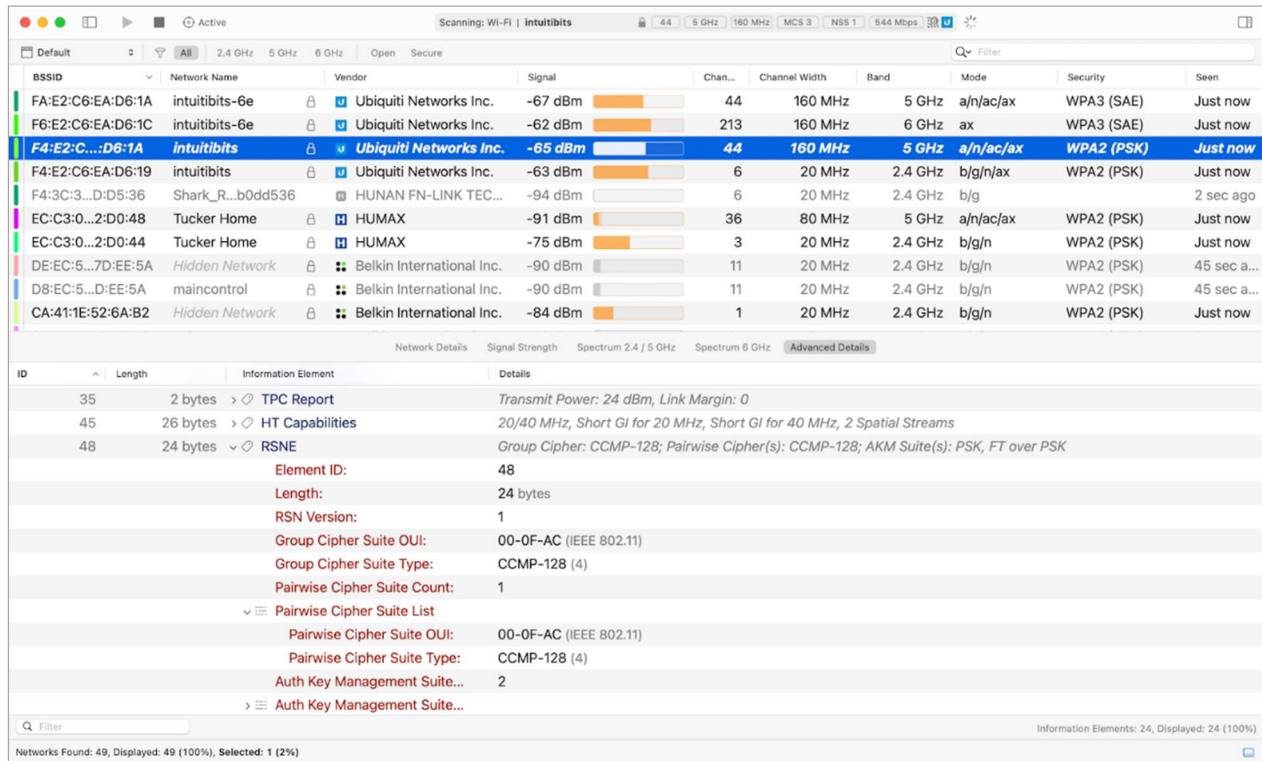


Figure 1-1 - WiFi Explorer Pro 3 User Interface

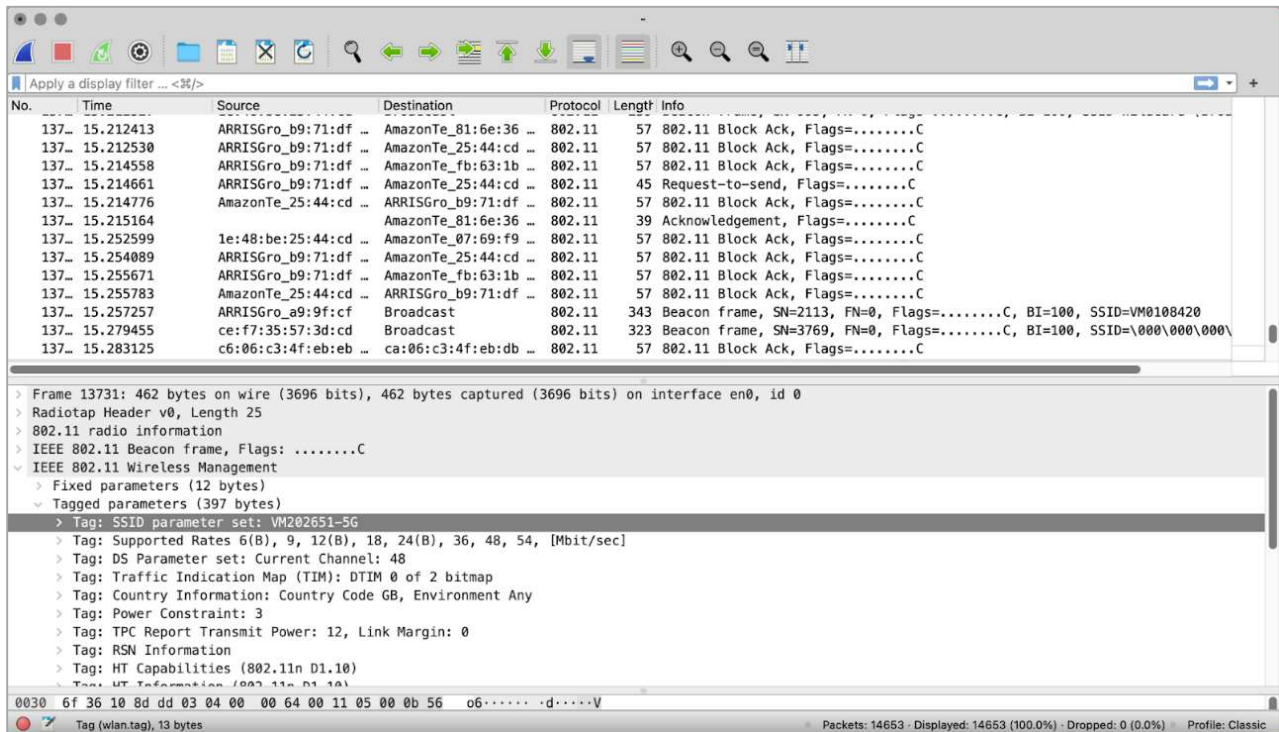


Figure 1-2 - Wireshark User Interface

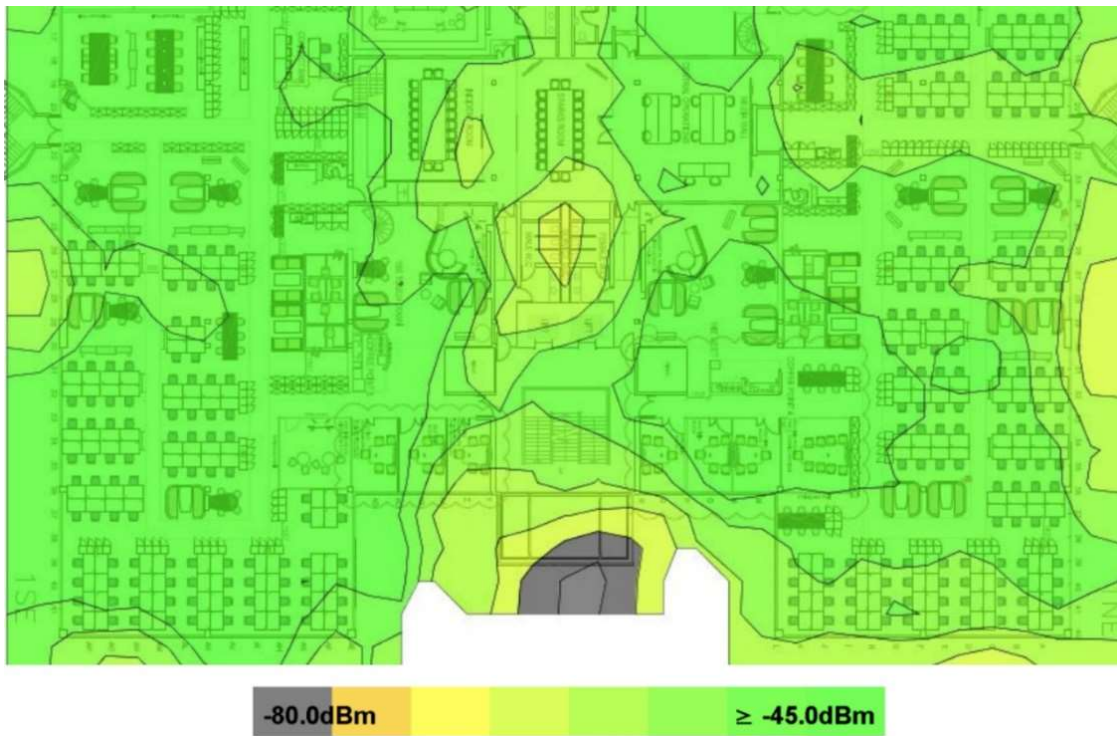


Figure 1-3 - Sample heatmap from a survey tool showing the projected signal levels of a new WLAN

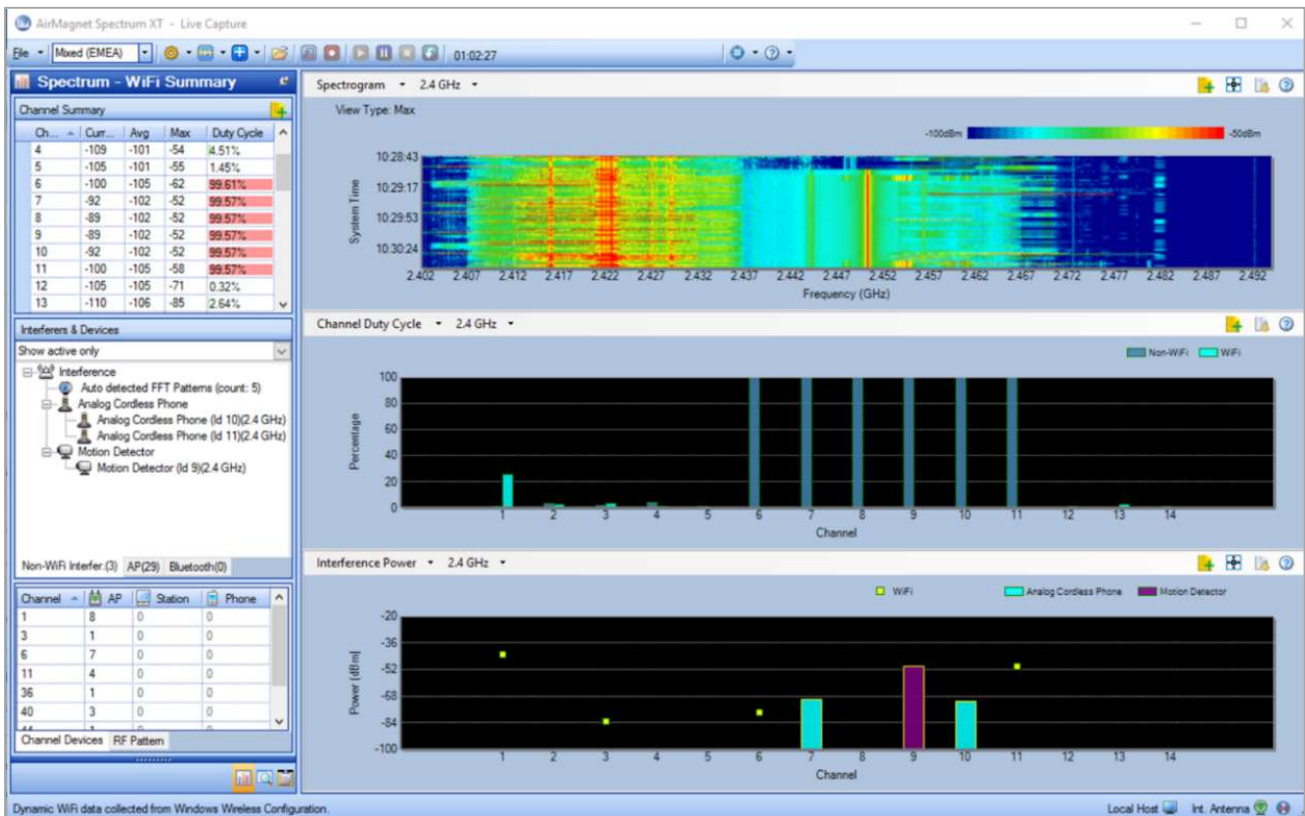


Figure 1-4 - Spectrum Analyzer screenshot

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

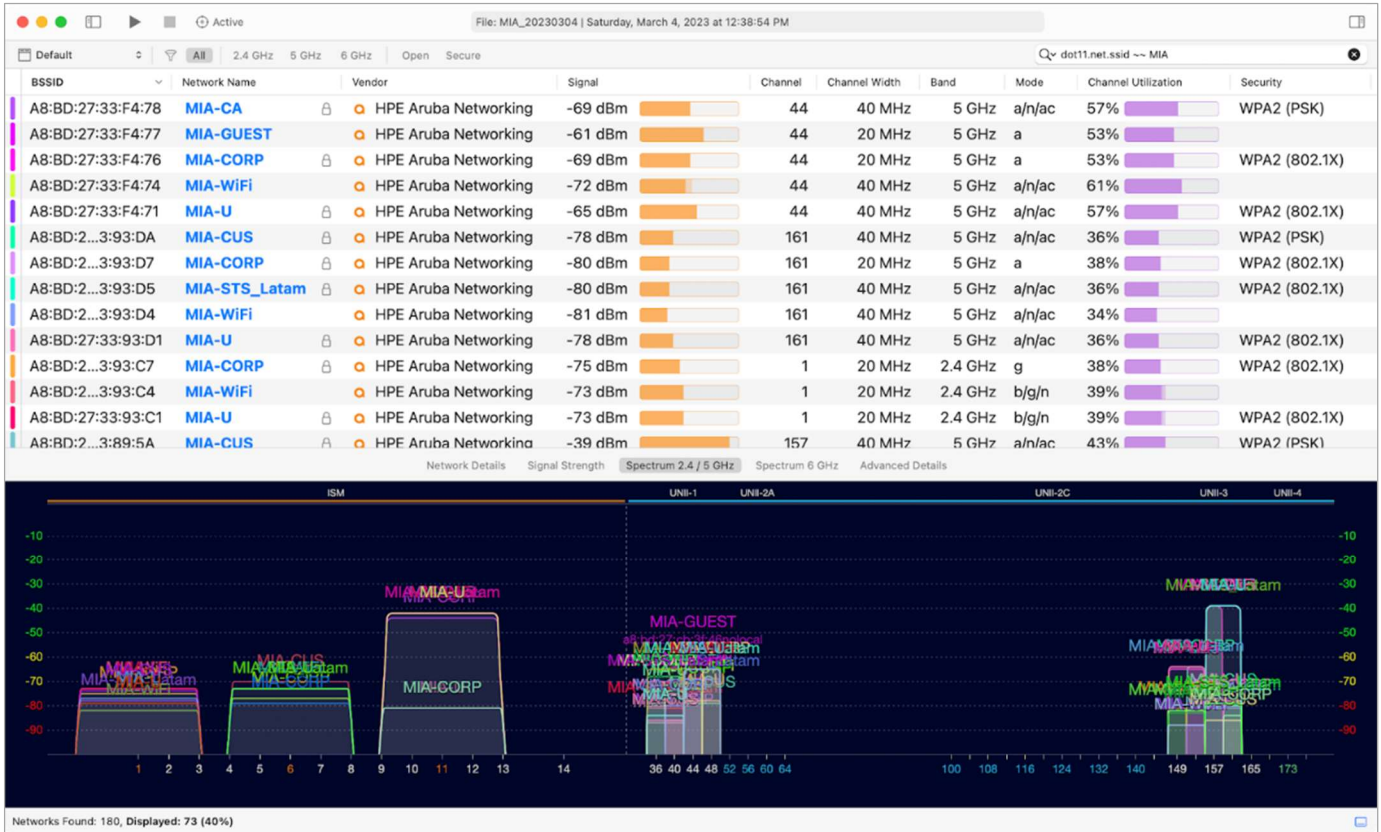


Figure 1-5 - Screenshot of WiFi Explorer Pro 3 (the premiere Wi-Fi scanner!)

## Chapter 2 - WLAN Scanning Theory

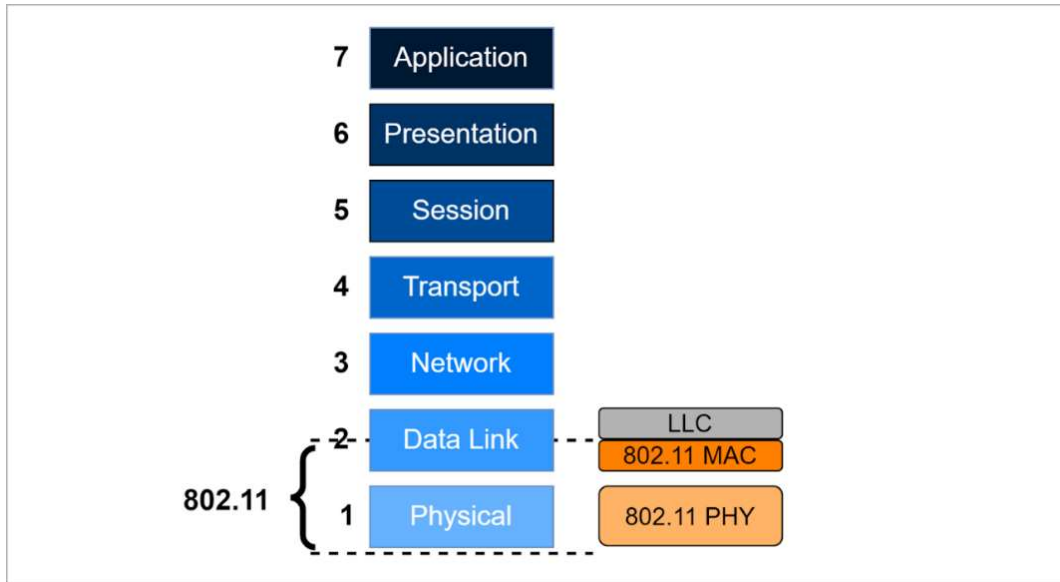


Figure 2-1 - OSI 7-layer model with 802.11 layer mapping

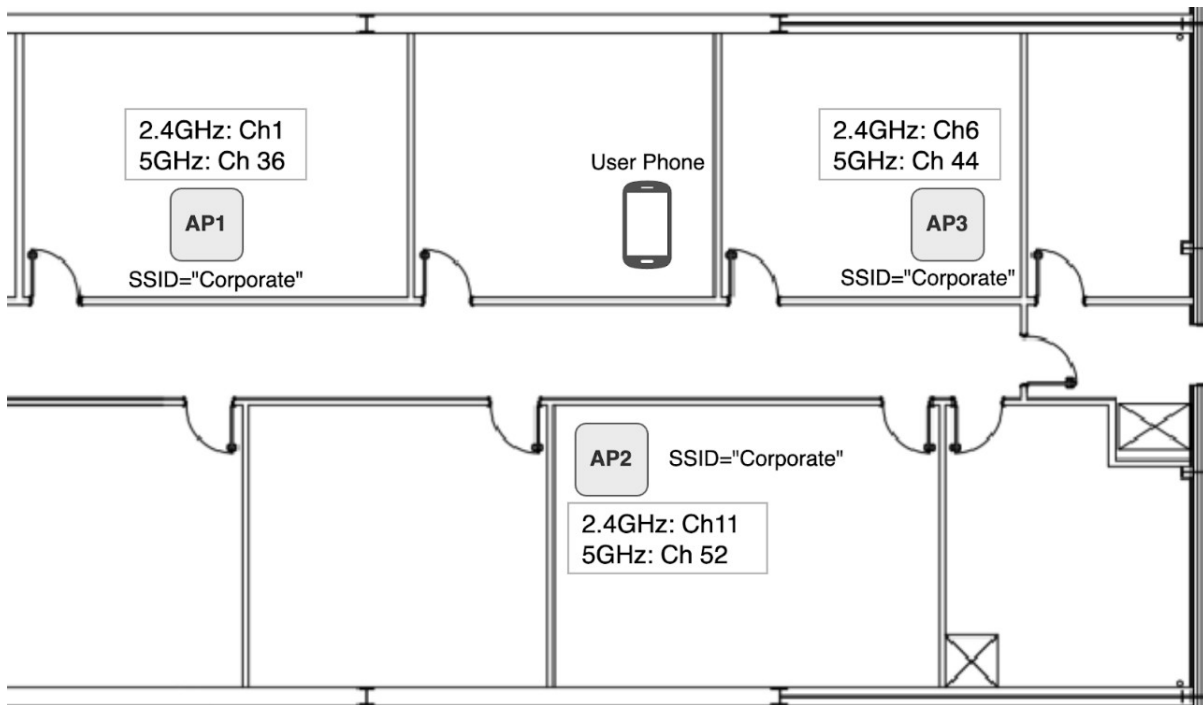


Figure 2-2 - AP channel allocations



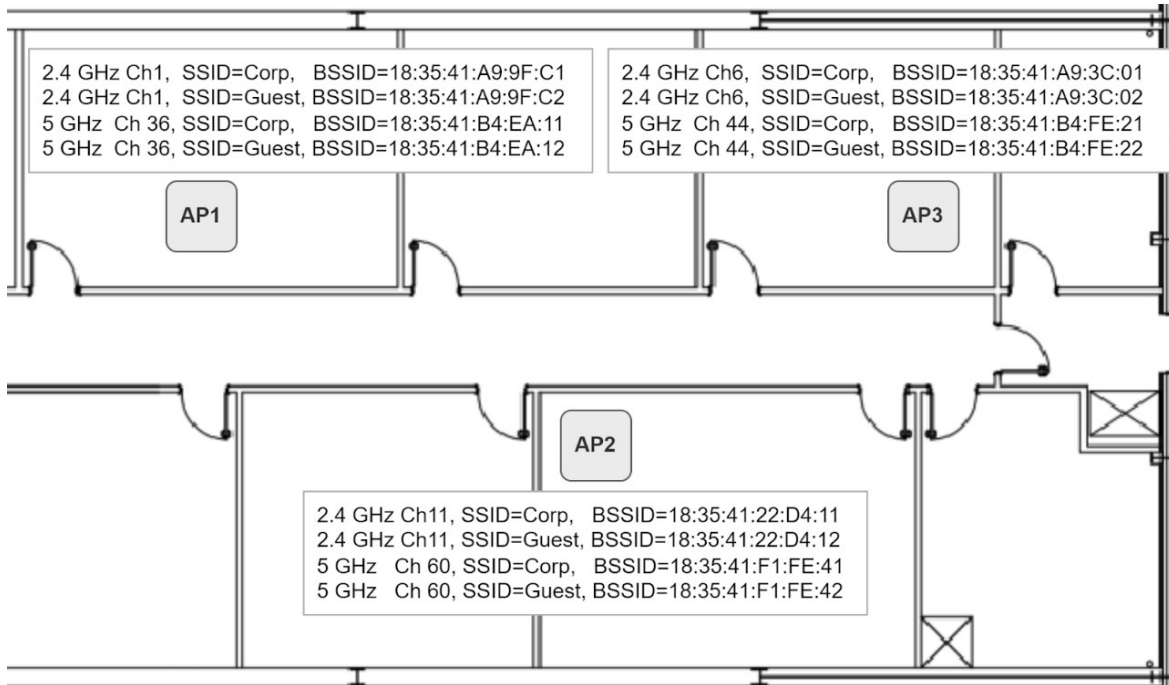


Figure 2-3 - BSSIDs for two SSIDs across the 2.4 GHz and 5 GHz radios

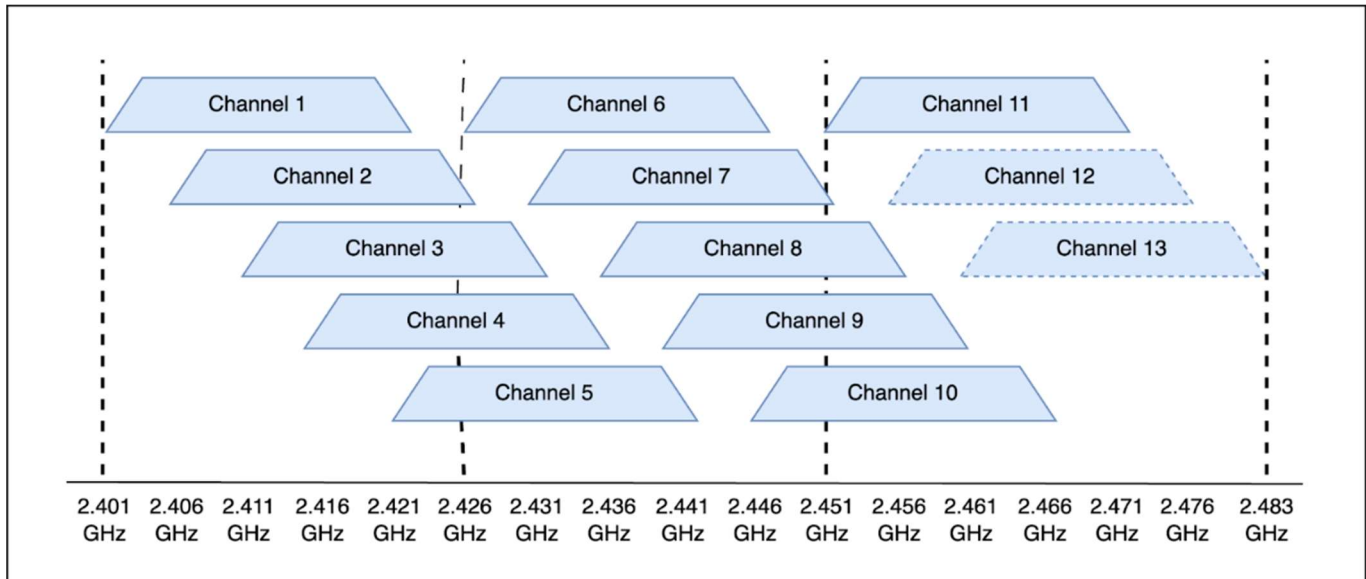


Figure 2-4 - 2.4 GHz band

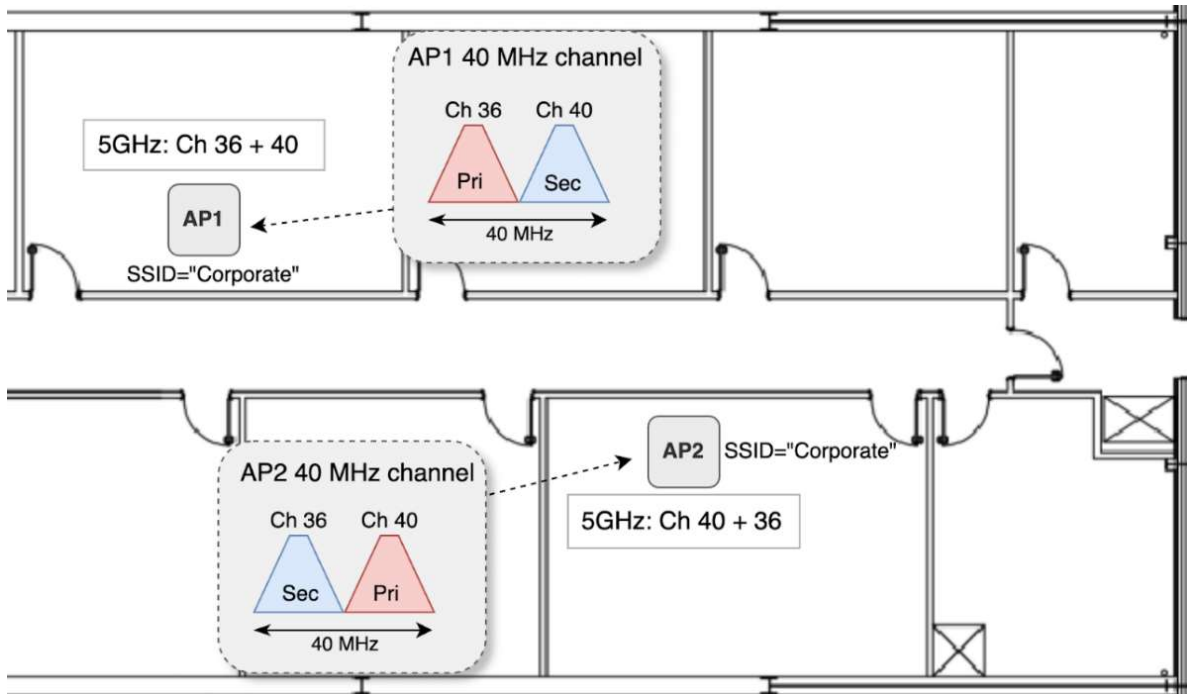


Figure 2-5 - OBSS when using bonded channels

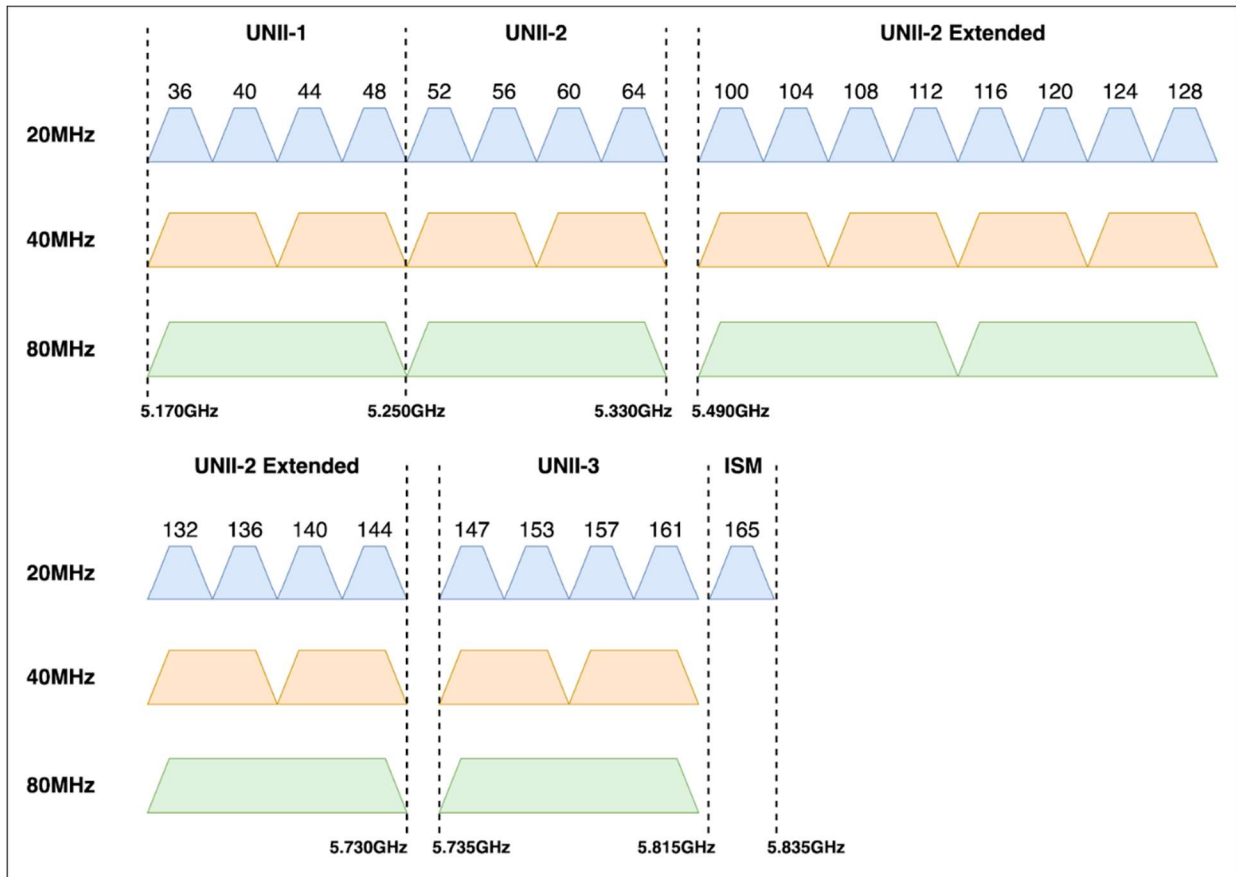


Figure 2-6 - 5 GHz Band

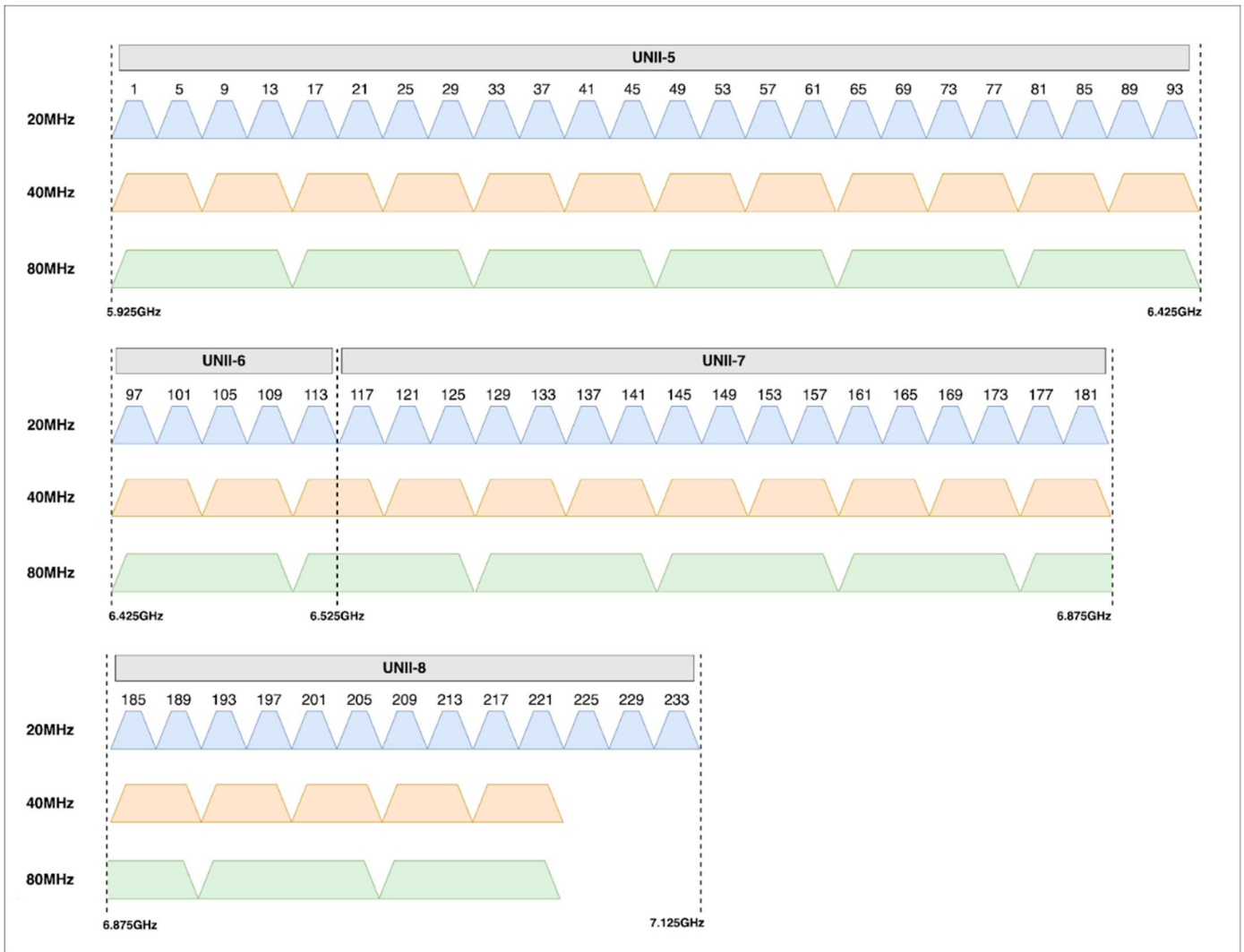


Figure 2-7 - 6 GHz band

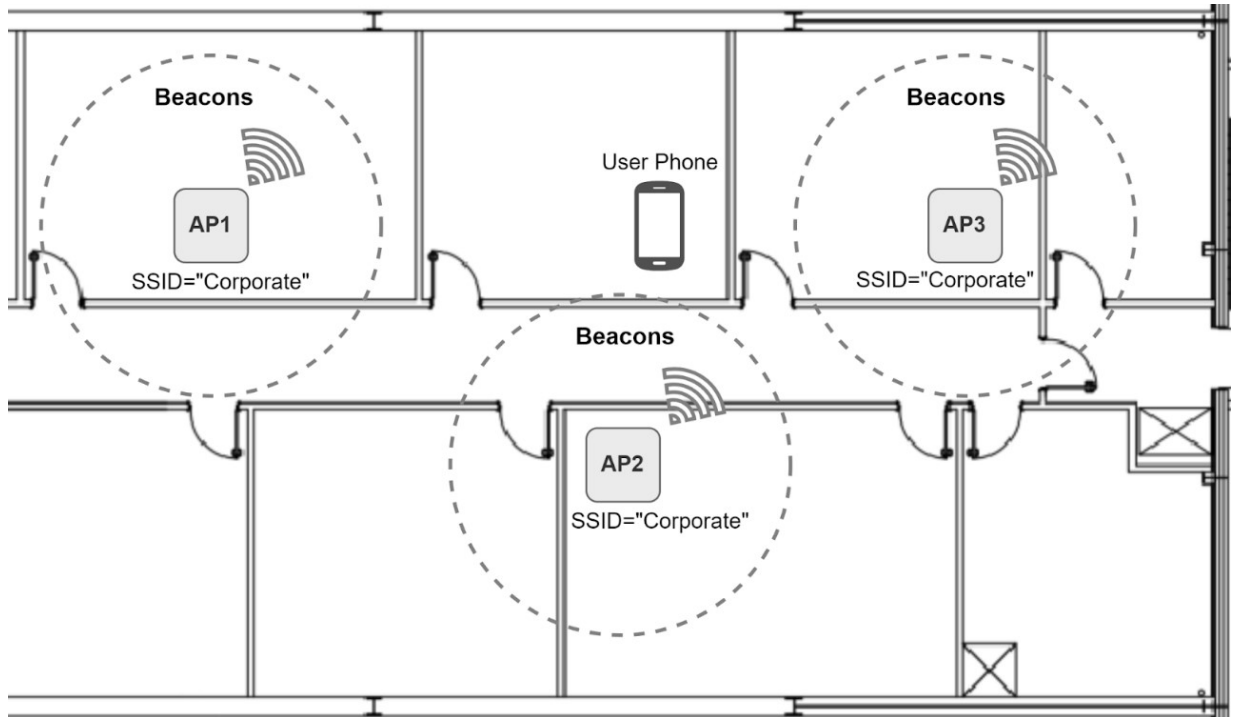


Figure 2-8 - APs broadcasting beacon frames

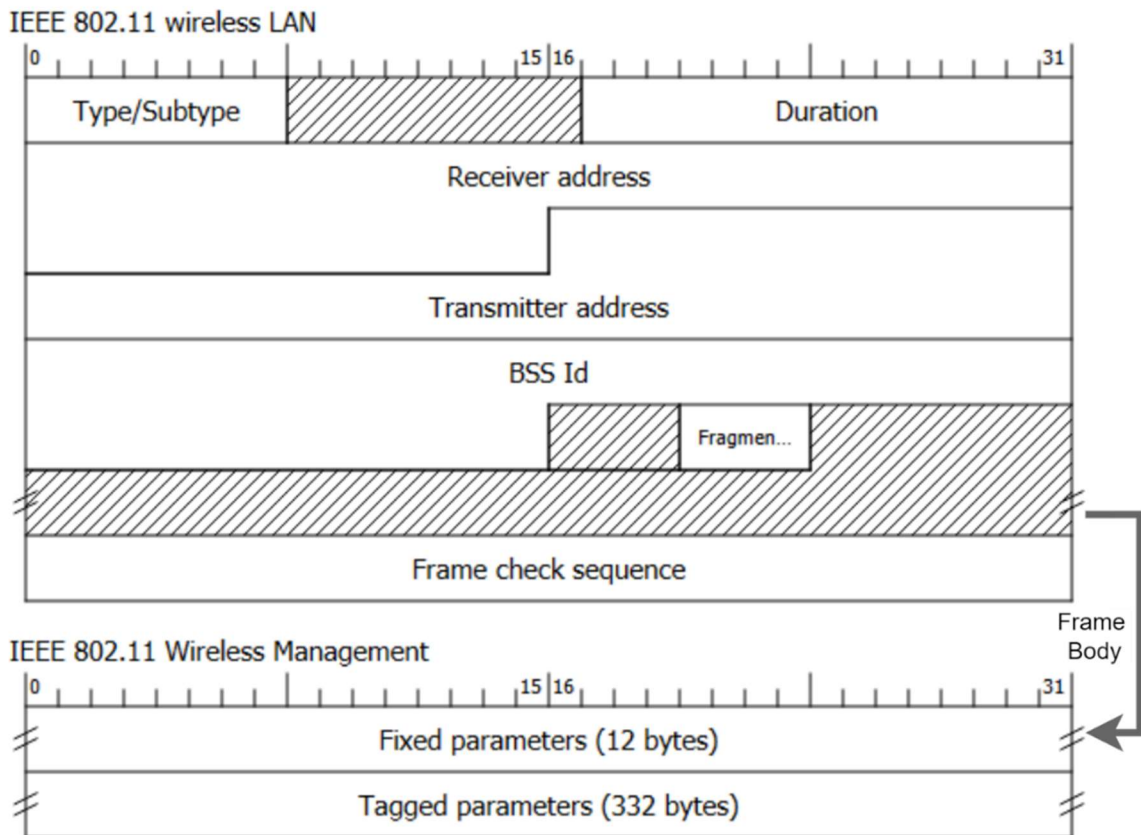


Figure 2-9 - Beacon frame format



```
> Frame 71: 369 bytes on wire (2952 bits), 369 bytes captured (2952 bits) on interface en0, id 0
> Radiotap Header v0, Length 25
> 802.11 radio information
> IEEE 802.11 Beacon frame, Flags: .....C
v IEEE 802.11 Wireless Management
  v Fixed parameters (12 bytes)
    Timestamp: 1962171187688
    Beacon Interval: 0.102400 [Seconds]
  > Capabilities Information: 0x0111
  v Tagged parameters (304 bytes)
    > Tag: SSID parameter set: "Zyxel_444D_5G"
    > Tag: Supported Rates 6(B), 9, 12(B), 18, 24(B), 36, 48, 54, [Mbit/sec]
    > Tag: Traffic Indication Map (TIM): DTIM 0 of 1 bitmap
    > Tag: Country Information: Country Code E0, Environment All
    > Tag: Power Constraint: 0
    > Tag: TPC Report Transmit Power: 19, Link Margin: 0
    > Tag: RSN Information
    > Tag: QBSS Load Element 802.11e CCA Version
    > Tag: HT Capabilities (802.11n D1.10)
    > Tag: HT Information (802.11n D1.10)
    > Tag: Extended Capabilities (8 octets)
    > Tag: VHT Capabilities
    > Tag: VHT Operation
    > Tag: Tx Power Envelope
    > Tag: Vendor Specific: Microsoft Corp.: WPS
    > Tag: Vendor Specific: Broadcom
    > Tag: Vendor Specific: Microsoft Corp.: WMM/WME: Parameter Element
```

Figure 2-10 - Beacon frame tag summary

```
v Tag: SSID parameter set: "Zyxel_444D_5G"
  Tag Number: SSID parameter set (0)
  Tag length: 13
  SSID: "Zyxel_444D_5G"
```

Figure 2-11 - SSID element

```
v Tag: QBSS Load Element 802.11e CCA Version
  Tag Number: QBSS Load Element (11)
  Tag length: 5
  QBSS Version: 2
  Station Count: 7
  Channel Utilization: 41 (16%)
  Available Admission Capacity: 0 (0 us/s)
```

Figure 2-12 - BSS load element

```

v Tag: RSN Information
  Tag Number: RSN Information (48)
  Tag length: 26
  RSN Version: 1
  > Group Cipher Suite: 00:0f:ac (Ieee 802.11) AES (CCM)
  Pairwise Cipher Suite Count: 1
  > Pairwise Cipher Suite List 00:0f:ac (Ieee 802.11) AES (CCM)
  Auth Key Management (AKM) Suite Count: 1
  > Auth Key Management (AKM) List 00:0f:ac (Ieee 802.11) PSK
  > RSN Capabilities: 0x008c
  PMKID Count: 0
  PMKID List
    
```

Figure 2-13 - RSN information

```

> Frame 1600: 147 bytes on wire (1176 bits), 147 bytes captured (1176 bits) on interface en0, id 0
> Radiotap Header v0, Length 25
> 802.11 radio information
> IEEE 802.11 Probe Request, Flags: .....C
v IEEE 802.11 Wireless Management
  v Tagged parameters (94 bytes)
    > Tag: SSID parameter set: Wildcard SSID
    > Tag: Supported Rates 6(B), 9, 12(B), 18, 24(B), 36, 48, 54, [Mbit/sec]
    > Tag: HT Capabilities (802.11n D1.10)
    > Tag: Extended Capabilities (8 octets)
    > Tag: VHT Capabilities
    > Ext Tag: HE Capabilities
    
```

Figure 2-14 - Null probe request

```

> Frame 118: 204 bytes on wire (1632 bits), 204 bytes captured (1632 bits) on interface en0, id 0
> Radiotap Header v0, Length 25
> 802.11 radio information
> IEEE 802.11 Probe Request, Flags: .....C
v IEEE 802.11 Wireless Management
  v Tagged parameters (151 bytes)
    > Tag: SSID parameter set: "Zyxe1_444D_5G"
    > Tag: Supported Rates 6(B), 9, 12(B), 18, 24(B), 36, 48, 54, [Mbit/sec]
    > Tag: HT Capabilities (802.11n D1.10)
    > Tag: Extended Capabilities (11 octets)
    > Tag: VHT Capabilities
    > Ext Tag: HE Capabilities
    > Tag: Vendor Specific: Apple, Inc.
    > Tag: Vendor Specific: Epigram, Inc.
    > Tag: Vendor Specific: Microsoft Corp.: Unknown 8
    > Tag: Vendor Specific: Broadcom
    
```

Figure 2-15 - Directed probe request

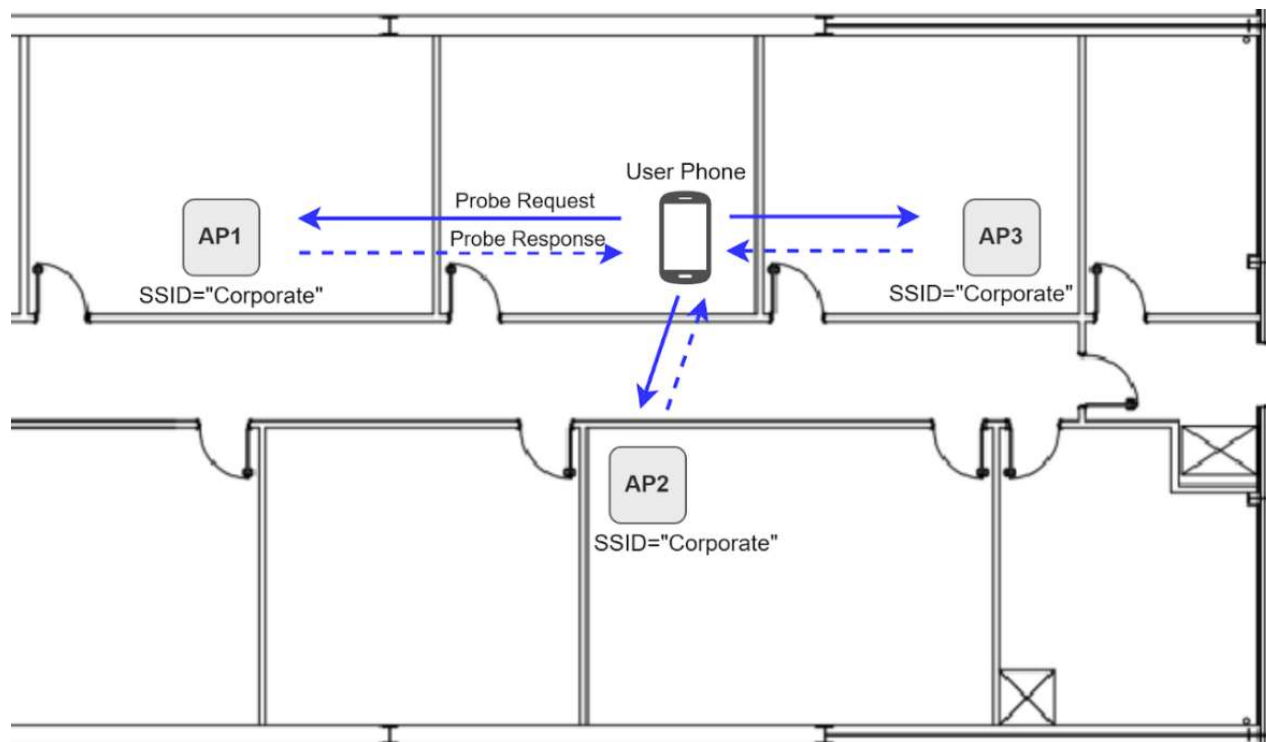


Figure 2-16 - Probe request and probe responses

```
> Frame 119: 462 bytes on wire (3696 bits), 462 bytes captured (3696 bits) on interface en0, id 0
> Radiotap Header v0, Length 25
> 802.11 radio information
> IEEE 802.11 Probe Response, Flags: .....C
√ IEEE 802.11 Wireless Management
  > Fixed parameters (12 bytes)
  √ Tagged parameters (397 bytes)
    > Tag: SSID parameter set: "Zyxel_444D_5G"
    > Tag: Supported Rates 6(B), 9, 12(B), 18, 24(B), 36, 48, 54, [Mbit/sec]
    > Tag: Country Information: Country Code E0, Environment All
    > Tag: Power Constraint: 0
    > Tag: TPC Report Transmit Power: 19, Link Margin: 0
    > Tag: RSN Information
    > Tag: QBSS Load Element 802.11e CCA Version
    > Tag: HT Capabilities (802.11n D1.10)
    > Tag: HT Information (802.11n D1.10)
    > Tag: Extended Capabilities (8 octets)
    > Tag: VHT Capabilities
    > Tag: VHT Operation
    > Tag: Tx Power Envelope
    > Tag: Vendor Specific: Microsoft Corp.: WPS
    > Tag: Vendor Specific: Broadcom
    > Tag: Vendor Specific: Microsoft Corp.: WMM/WME: Parameter Element
```

Figure 2-17 - Probe response

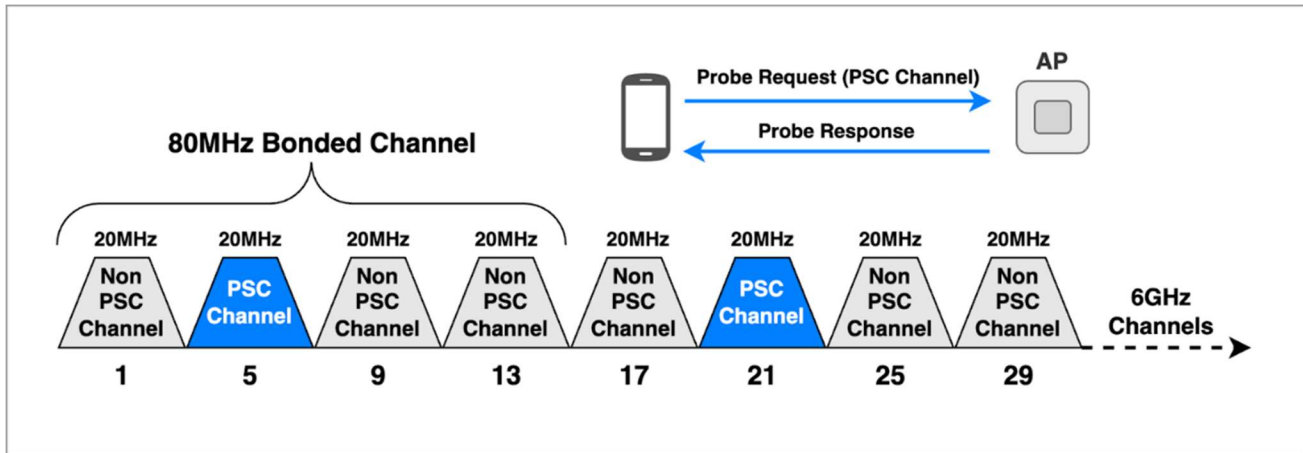


Figure 2-18 - PSC channel probes

Default All 2.4 GHz 5 GHz Open Secure Filter

BSSID	Network Name	Vendor	Signal	Channel	Streams	SNR
94:18:65:B6:DC:48	BNL	Netgear Inc.	-37 dBm	48	4	59 dB
94:18:65:B6:DC:25	VM202651-2G	Netgear Inc.	-51 dBm	1	2	32 dB
52:0D:10:D1:A9:01	Virgin Media	ARRIS Group Inc.	-57 dBm	6	2	39 dB
D4:20:B0:8A:31:61	VM202651-2G	Mist Systems Inc.	-62 dBm	11	4	34 dB

Network Details Signal Strength Spectrum 2.4 / 5 GHz Advanced Details

ID	Length	Information Element	Details
192	5 bytes	VHT Operation	Channel Width: 20 MHz or 40 MHz, Channel Center Frequ...
195	5 bytes	Transmit Power Envelope	Local EIRP
201	30 bytes	Reduced Neighbor Report	Channel: 37 (80 MHz), BSSID 0: 94:18:65:B6:DC:62, Short...
		Element ID:	201
		Length:	30 bytes
		Neighbor AP Information:	Channel 37 Operating Class 133 (80 MHz)
		TBTT Information Header:	0x0d10
		Operating Class:	133 80 MHz
		Channel Number:	37
		TBTT 0	
		Neighbor AP TBTT Offset:	Unknown 0xff
		BSSID:	94:18:65:B6:DC:62 (Netgear Inc.)
		Short SSID:	0xFA150FFC
		BSS Parameters:	0x4c
		20 MHz PSD:	11.0 dBm/MHz
		TBTT 1	

Filter dot11.reduced\_neighbor\_report Information Elements: 22, Displayed: 22 (100%)

Figure 2-19 - Reduced Neighbor Report data

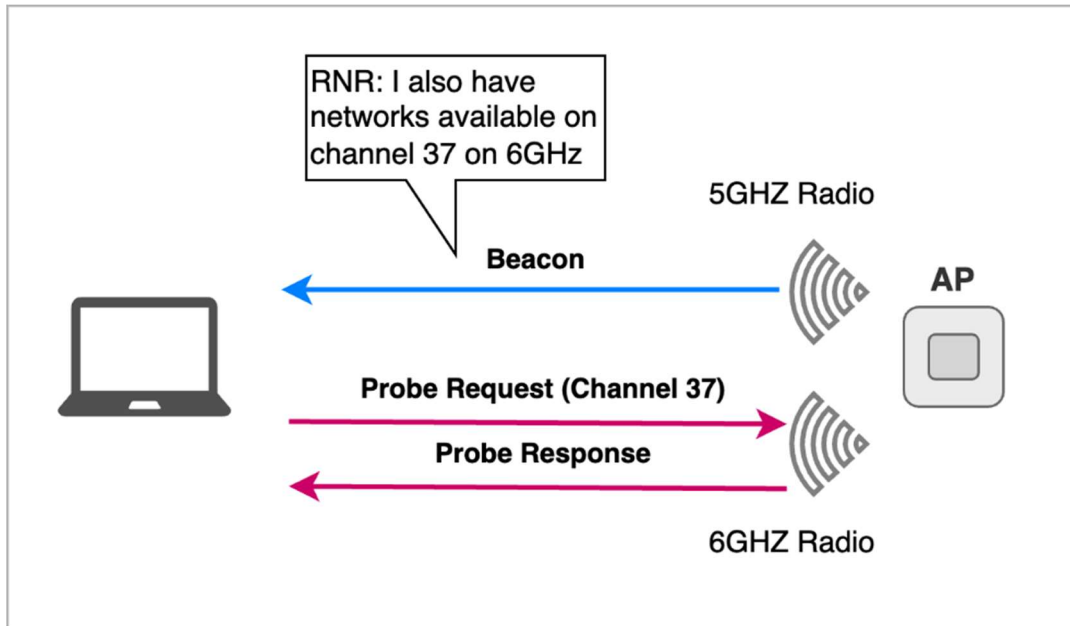


Figure 2-20 - RNR operation



# Chapter 3 - Local Data Acquisition

BSSID	Vendor	Network Name	Signal	Noise	SNR	Channel
70:F1:96:44:8B:92	Actiontec Electronics Inc.	TELUS2438	-47 dBm	-87 dBm	40 dB	11
18:82:8C:C6:9C:73	Arcadyan Technology Corp.	TELUSWIFI5087	-52 dBm	-87 dBm	35 dB	6
00:1D:C9:09:68:01	GainSpan Corp.	REMOTE27brzs	-53 dBm	-87 dBm	34 dB	3
9C:1E:95:1B:43:82	Actiontec Electronics Inc.	TELUS1449	-60 dBm	-87 dBm	27 dB	11
10:78:5B:DC:EF:12	Actiontec Electronics Inc.	TELUS1197	-60 dBm	-90 dBm	30 dB	11
6E:F1:96:44:8B:96	Actiontec Electronics Inc.	Hidden Network	-61 dBm	-87 dBm	26 dB	36
70:F1:96:44:8B:96	Actiontec Electronics Inc.	TELUS2438	-61 dBm	-87 dBm	26 dB	36
18:82:8C:C6:9D:DB	Arcadyan Technology Corp.	TELUSWIFI5087	-63 dBm	-87 dBm	24 dB	6
04:17:B6:EC:A7:83	Smart Innovation	Hidden Network	-65 dBm	-87 dBm	22 dB	4
A0:FF:70:3E:06:A8	Vantiva USA	Hidden Network	-66 dBm	-91 dBm	25 dB	1
A0:FF:70:3E:06:A5	Vantiva USA	Witts World	-67 dBm	-87 dBm	20 dB	1
1A:82:8C:E6:9C:74	Arcadyan Technology Corp.	Hidden Network	-68 dBm	-90 dBm	22 dB	149
8C:76:3F:7E:09:F3	CommScope	SHAW-09EF	-69 dBm	-90 dBm	21 dB	6
9C:3D:CF:4C:36:9C	Netgear Inc.	NETGEAR16	-70 dBm	-87 dBm	17 dB	6
8E:76:3F:7E:09:F3	CommScope	Hidden Network	-70 dBm	-91 dBm	21 dB	6
EC:6C:9A:16:2F:8F	Arcadyan Technology Corp.	TELUSWIFI3318	-71 dBm	-90 dBm	19 dB	1
18:82:8C:C6:9C:74	Arcadyan Technology Corp.	TELUSWIFI5087	-72 dBm	-87 dBm	15 dB	149
96:76:3F:7E:09:F3	CommScope	Hidden Network	-74 dBm	-86 dBm	12 dB	6

Networks Found: 53, Displayed: 53 (100%)

Figure 3-1 - WFE Pro 3 showing signal, noise & SNR data

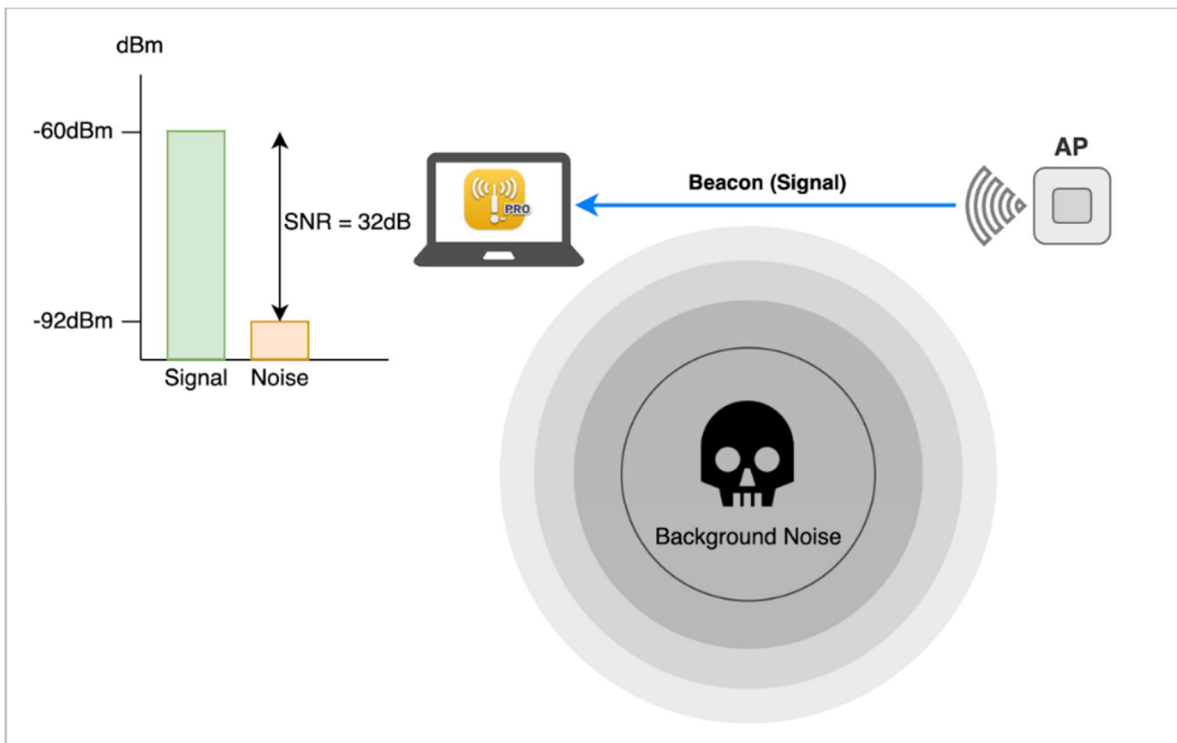


Figure 3-2 - SNR calculation

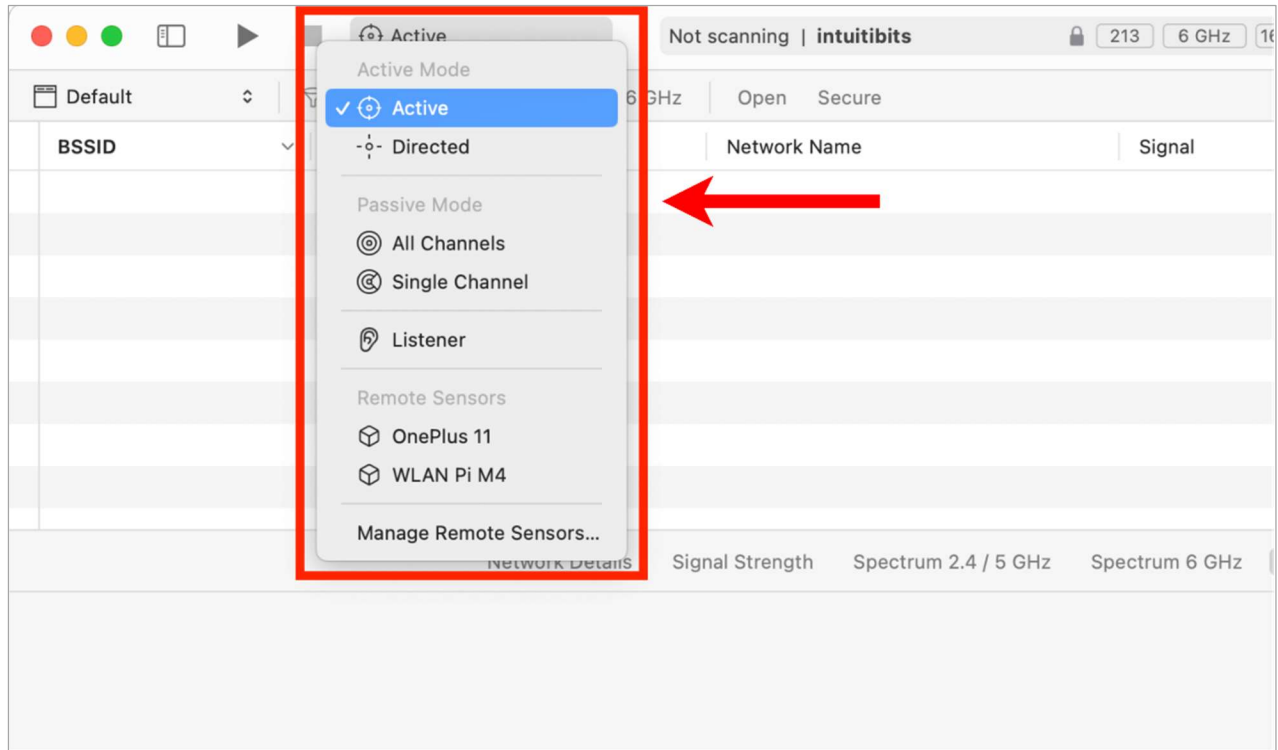


Figure 3-3 - WFE Pro 3 scanning options

# Chapter 4 - Data Acquisition Using Sensors

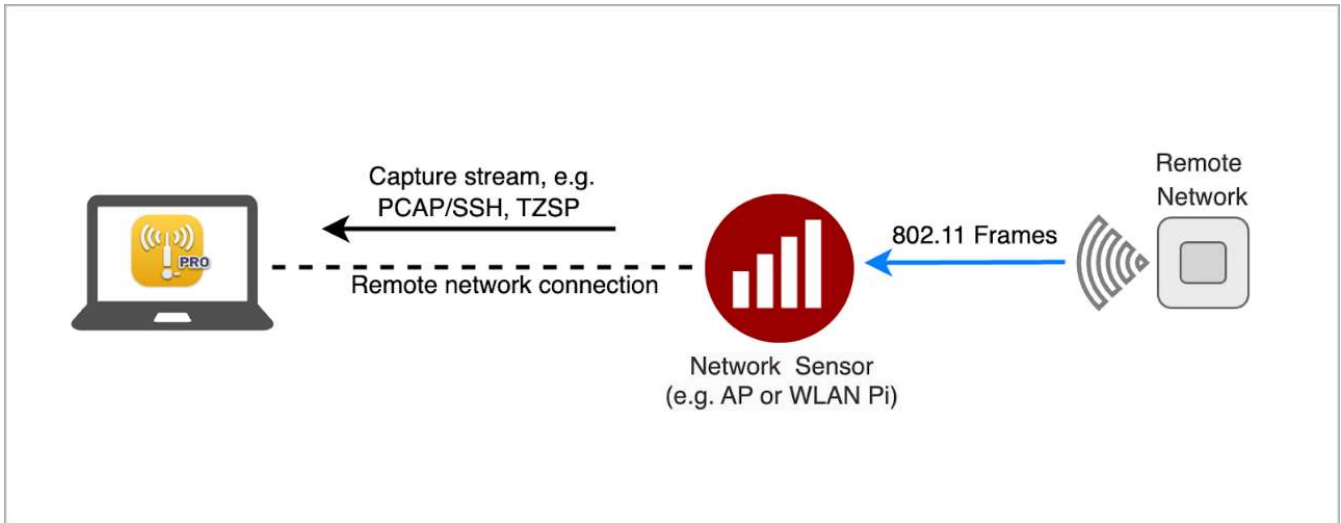


Figure 4-1 - Remote sensor operation

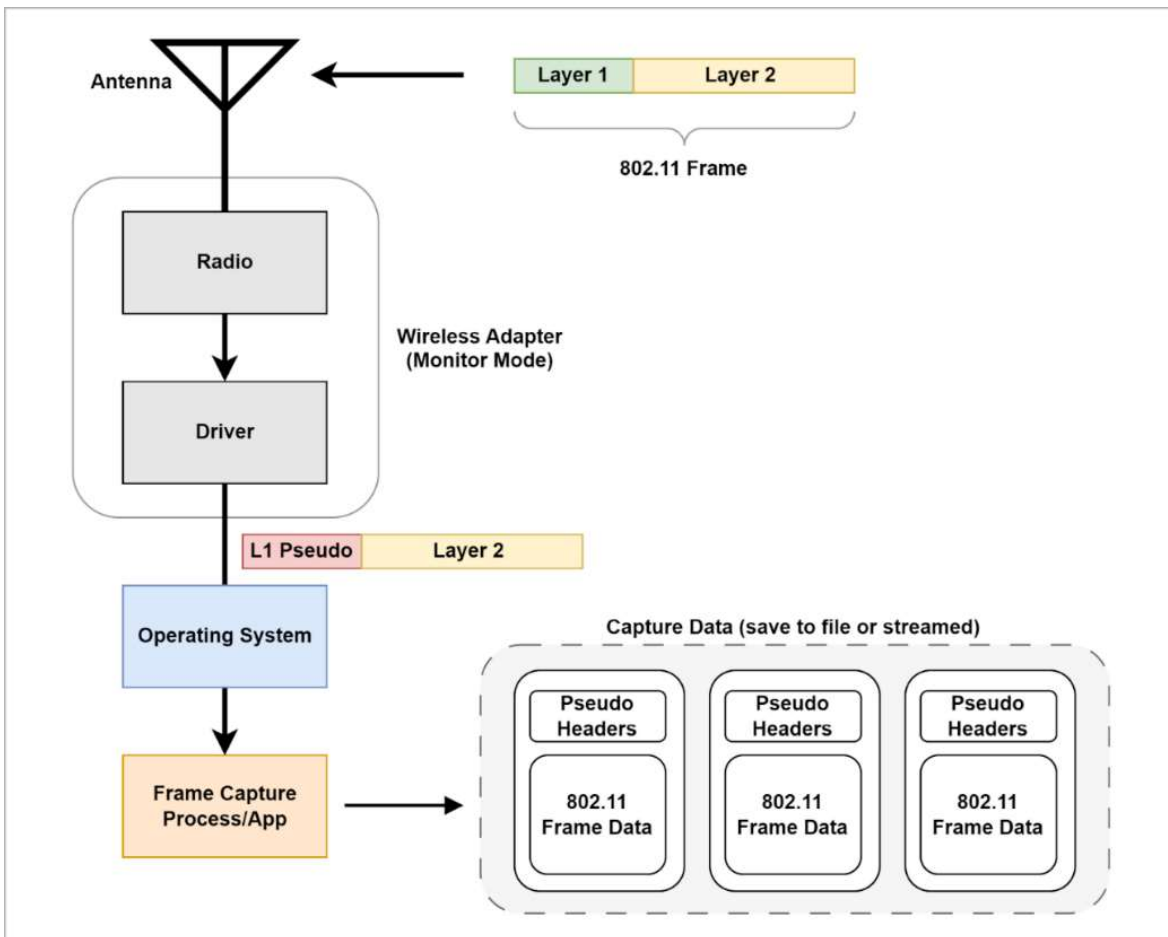


Figure 4-2 - Pseudo-header injection



```

▶ Frame 1: 277 bytes on wire (2216 bits), 277 bytes captured (2216 bits)
▼ Radiotap Header v0, Length 25
  Header revision: 0
  Header pad: 0
  Header length: 25
  ▶ Present flags
  MAC timestamp: 310768875
  ▼ Flags: 0x12
    .... ..0 = CFP: False
    .... ..1 = Preamble: Short
    .... .0.. = WEP: False
    .... 0... = Fragmentation: False
    ...1 .... = FCS at end: True
    ..0. .... = Data Pad: False
    .0.. .... = Bad FCS: False
    0... .... = Short GI: False
  Data Rate: 6.0 Mb/s
  Channel frequency: 5805 [A 161]
  ▼ Channel type: 802.11a (0x0140), Orthogonal Frequency-Division Multiplexing (OFDM), 5 GHz spectrum
    .... .... ..0 .... = Turbo: False
    .... .... ..0. .... = Complementary Code Keying (CCK): False
    .... .... ..1. .... = Orthogonal Frequency-Division Multiplexing (OFDM): True
    .... .... 0... .... = 2 GHz spectrum: False
    .... .... ..1 .... = 5 GHz spectrum: True
    .... ..0. .... .... = Passive: False
    .... .0.. .... .... = Dynamic CCK-OFDM: False
    .... 0... .... .... = Gaussian Frequency Shift Keying (GFSK): False
    ...0 .... .... .... = GSM (900MHz): False
    ..0. .... .... .... = Static Turbo: False
    .0.. .... .... .... = Half Rate Channel (10MHz Channel Width): False
    0... .... .... .... = Quarter Rate Channel (5MHz Channel Width): False
  SSI Signal: -58 dBm
  SSI Noise: -92 dBm
  Antenna: 1
  ▶ IEEE 802.11 Beacon frame, Flags: .....C
  ▶ IEEE 802.11 wireless LAN management frame
  
```

Figure 4-3 - Radiotap pseudo-header data example

```

▶ Frame 11: 209 bytes on wire (1672 bits), 209 bytes captured (1672 bits)
▼ PPI version 0, 32 bytes
  Version: 0
  ▼ Flags: 0x00
    .... ..0 = Alignment: Not aligned
    0000 000. = Reserved: 0x00
  Header length: 32
  DLT: 105
  ▼ 802.11-Common
    Field type: 802.11-Common (2)
    Field length: 20
    TSFT: 184674142
    ▶ Flags: 0x0001
    Rate: 866.5 Mbps
    Channel frequency: 5805 [A 161]
    ▶ Channel type: 802.11a (0x0140)
    FHSS hopset: 0x00
    FHSS pattern: 0x00
    dBm antenna signal: -50
    dBm antenna noise: -92
  ▶ IEEE 802.11 QoS Data, Flags: .....F.C
  
```

Figure 4-4 - PPI pseudo-header data example

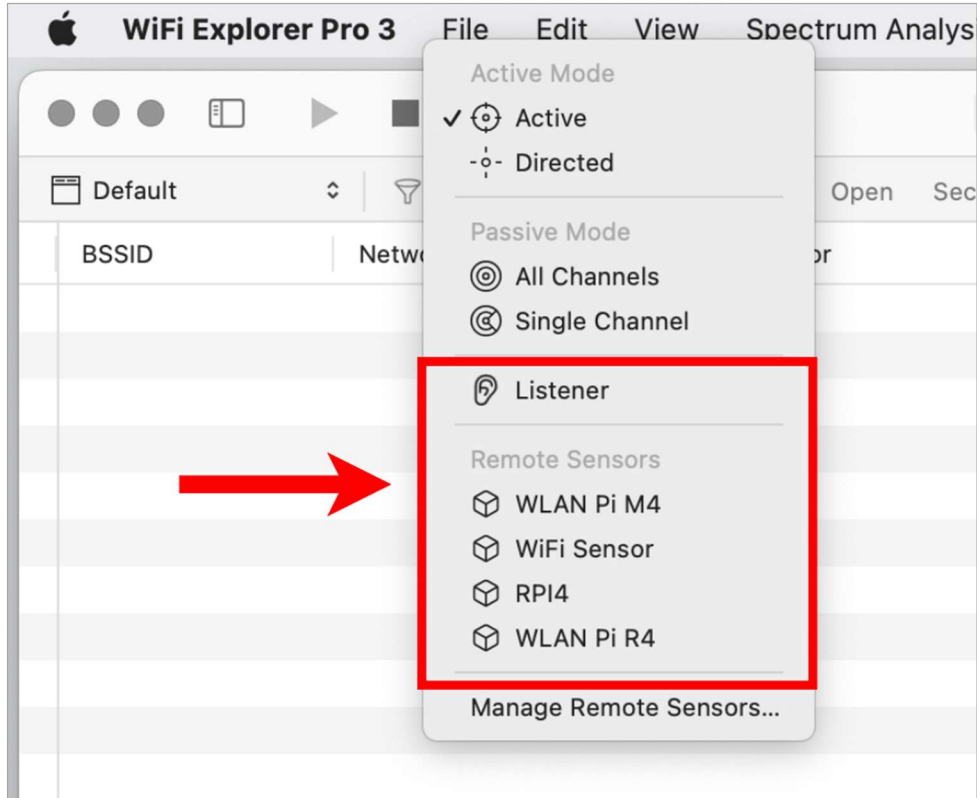


Figure 4-5 - Network sensor options

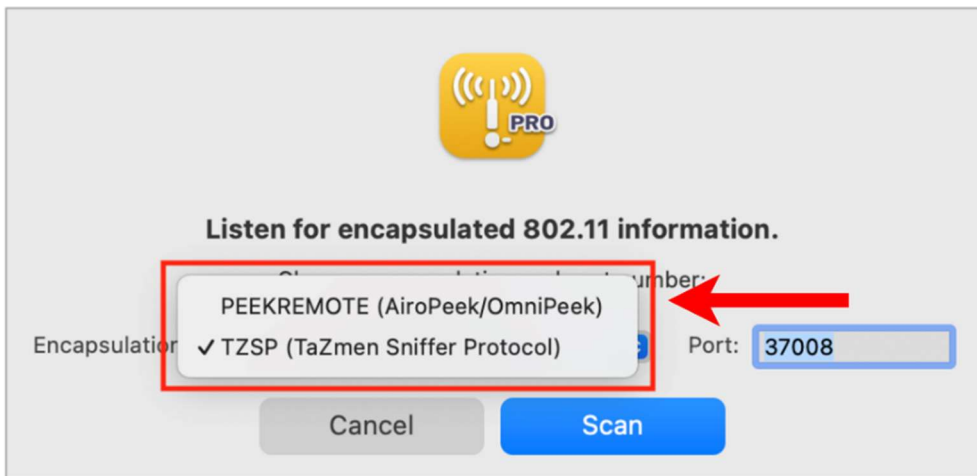


Figure 4-6 - Listener mode options available in WFE Pro 3

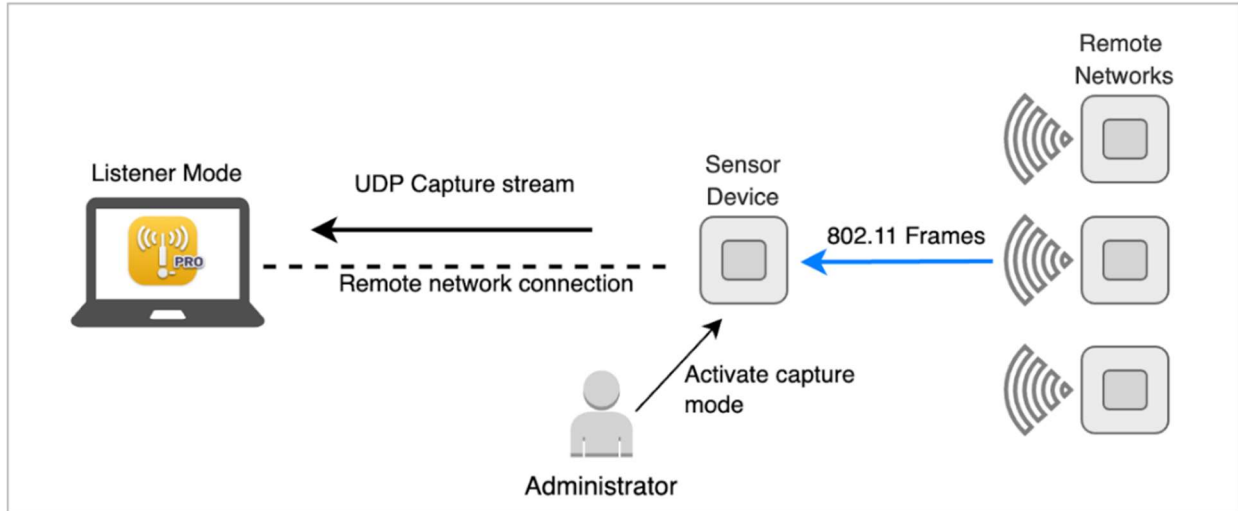


Figure 4-7 - Listener mode operation

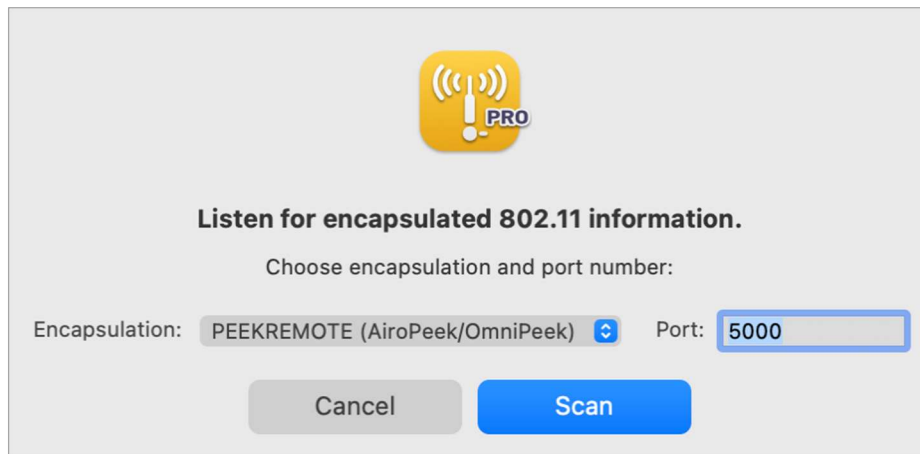


Figure 4-8 - Listener mode: PEEKREMOTE

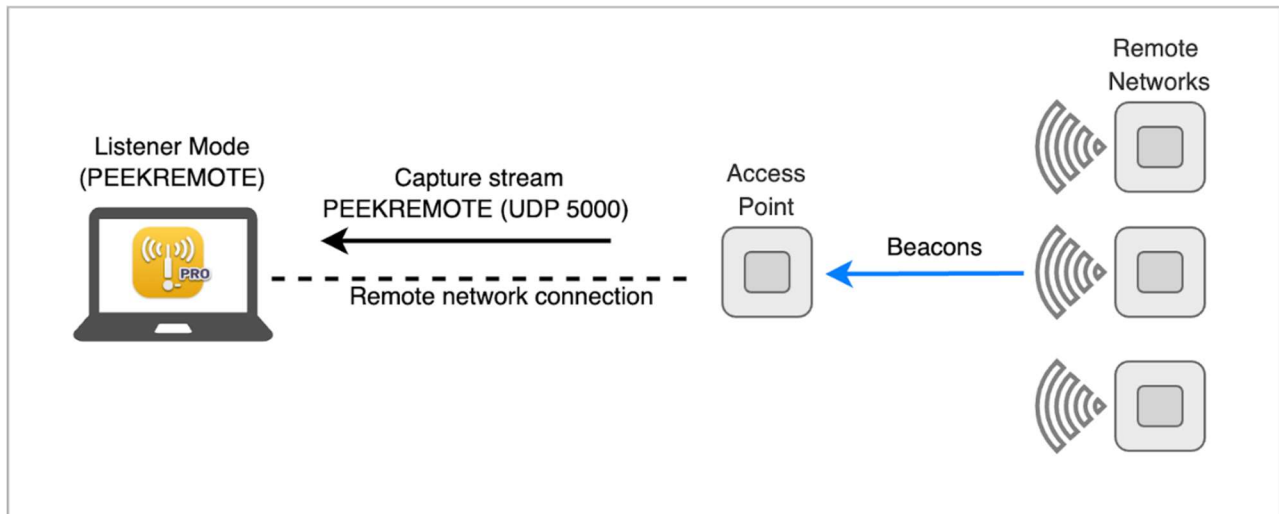


Figure 4-9 - PEEKREMOTE capture stream from an access point

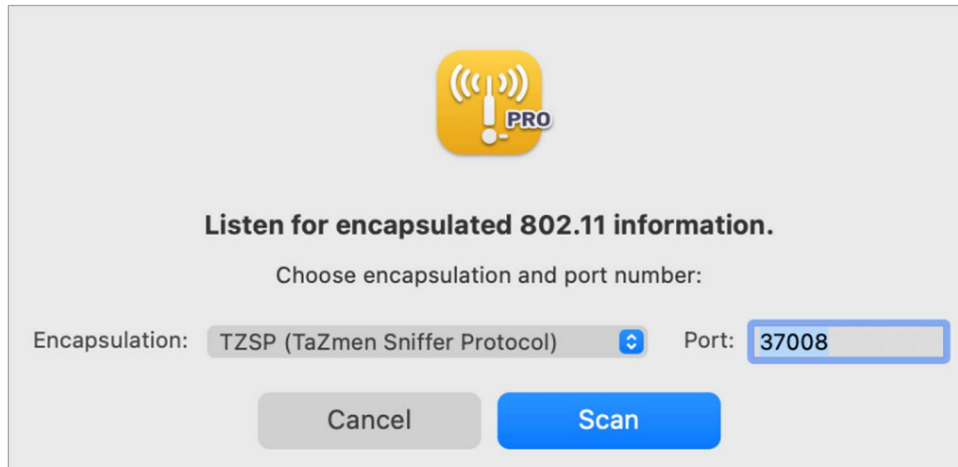


Figure 4-10 - Listener mode: TZSP

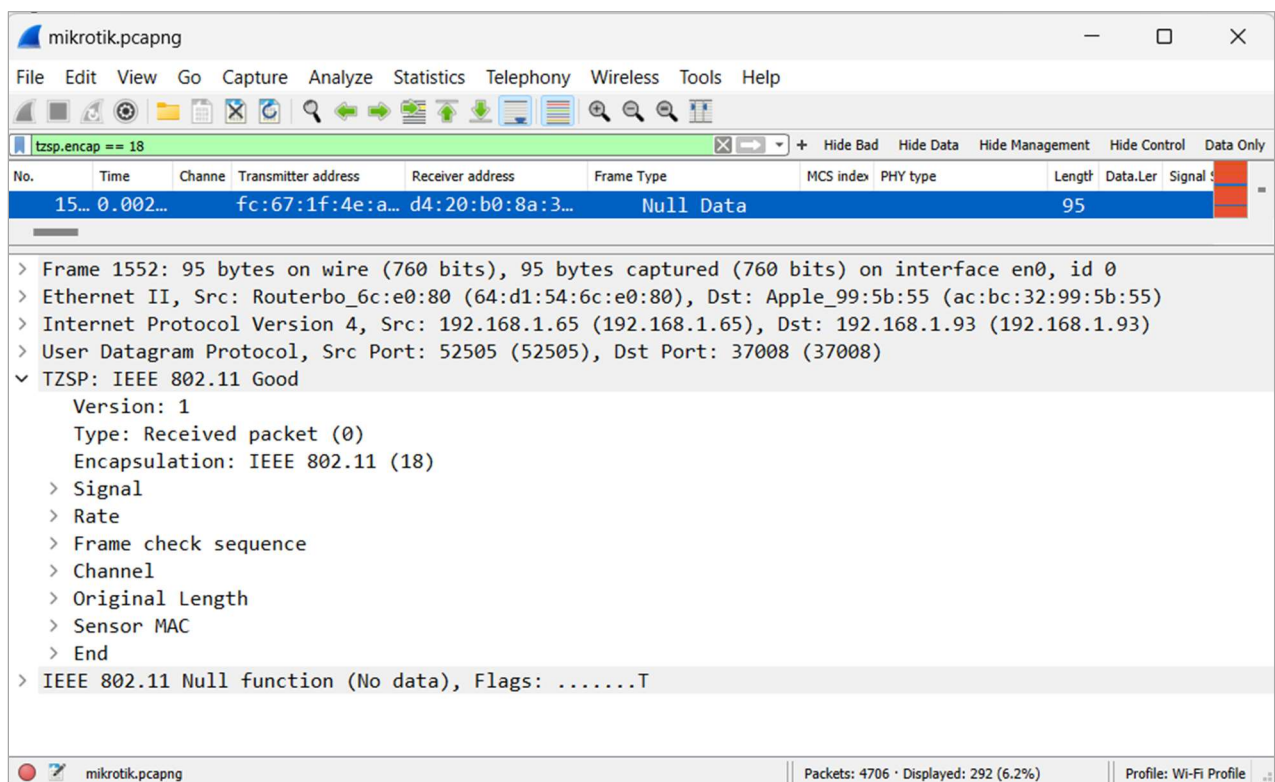


Figure 4-11 - TZSP header data example

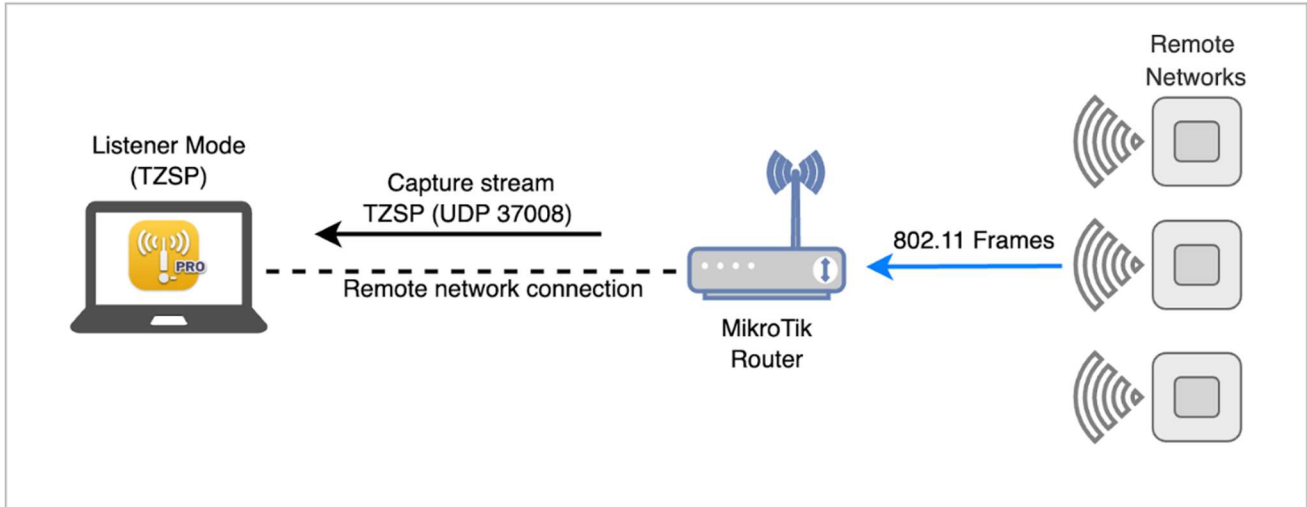


Figure 4-12 - TZSP capture stream from MikroTik device

```
Terminal <1>
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] >
[admin@hAP-ac] > /interface wireless sniffer
[admin@hAP-ac] /interface wireless sniffer> set multiple-channels=yes only-header
s=no streaming-enabled=yes streaming-server=192.168.1.86
[admin@hAP-ac] /interface wireless sniffer> sniff wlan2
    processed-packets: 1343
        memory-size: 10229
    memory-saved-packets: 48
memory-over-limit-packets: 1295
stream-dropped-packets: 0
    stream-sent-packets: 1343
        real-file-limit: 10
        real-memory-limit: 10
-- [Q quit|D dump|C-z pause]
```

Figure 4-13 - MikroTik device capture

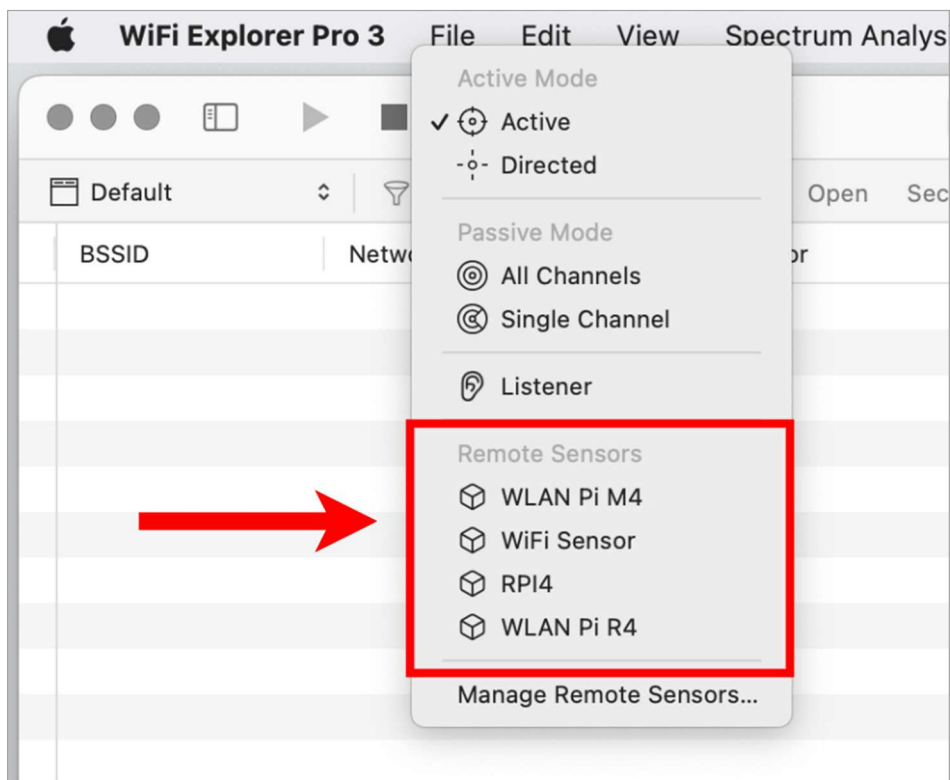


Figure 4-14 - Remote sensors selection and management options

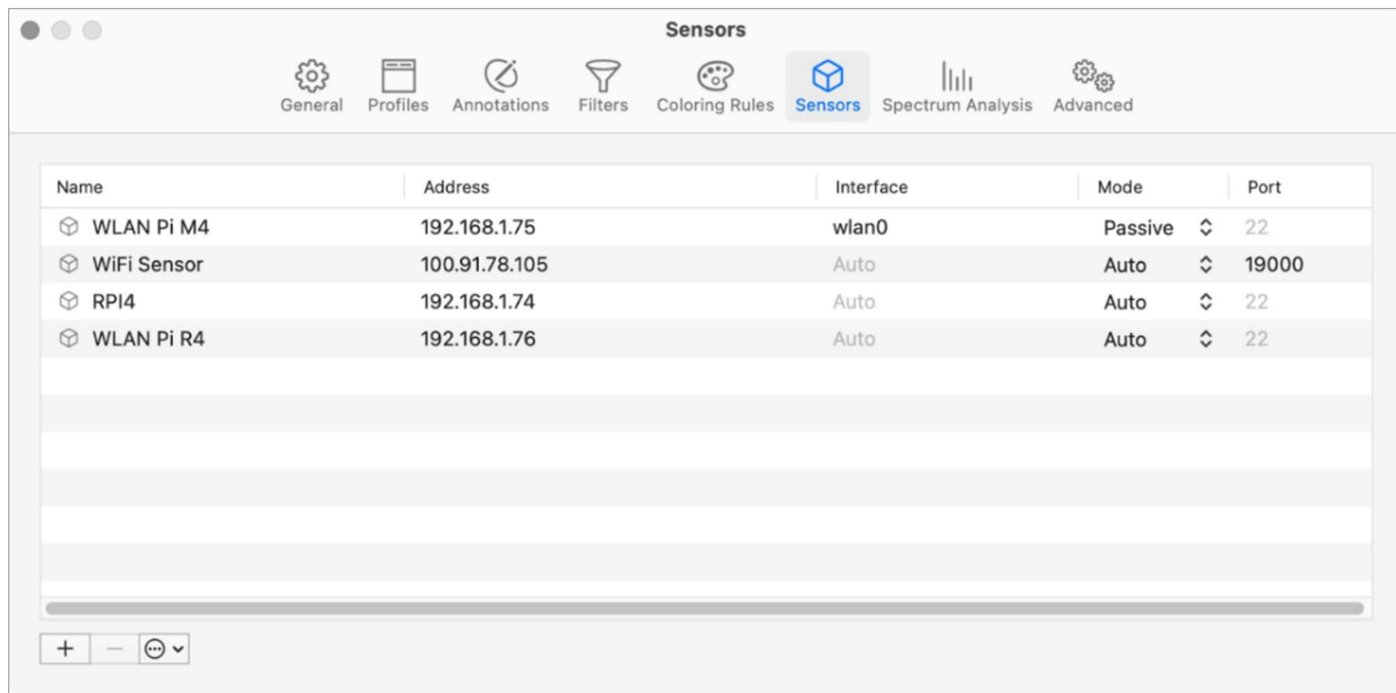


Figure 4-15 - Remote sensor management

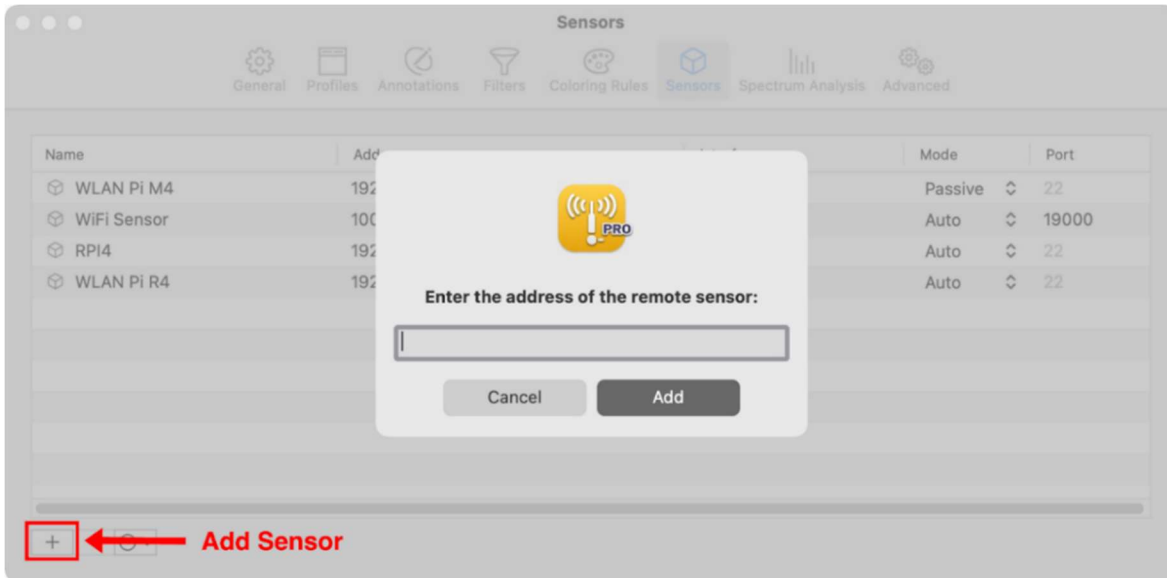


Figure 4-16 - Adding a new sensor

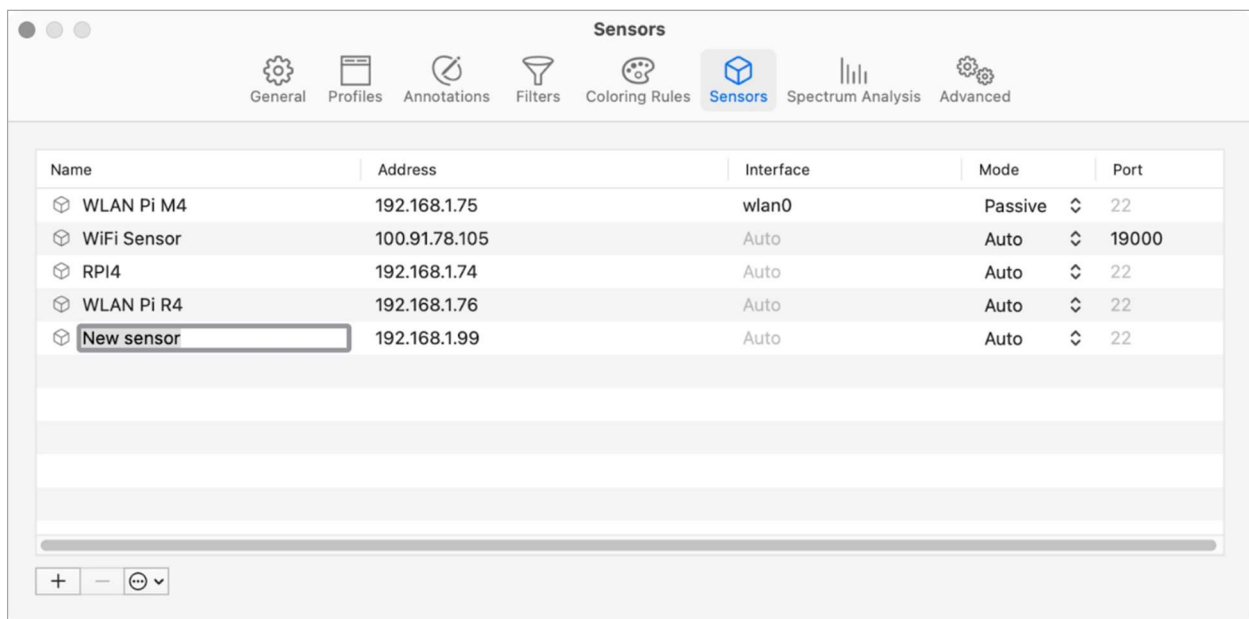


Figure 4-17 - A new sensor with initial attribute values

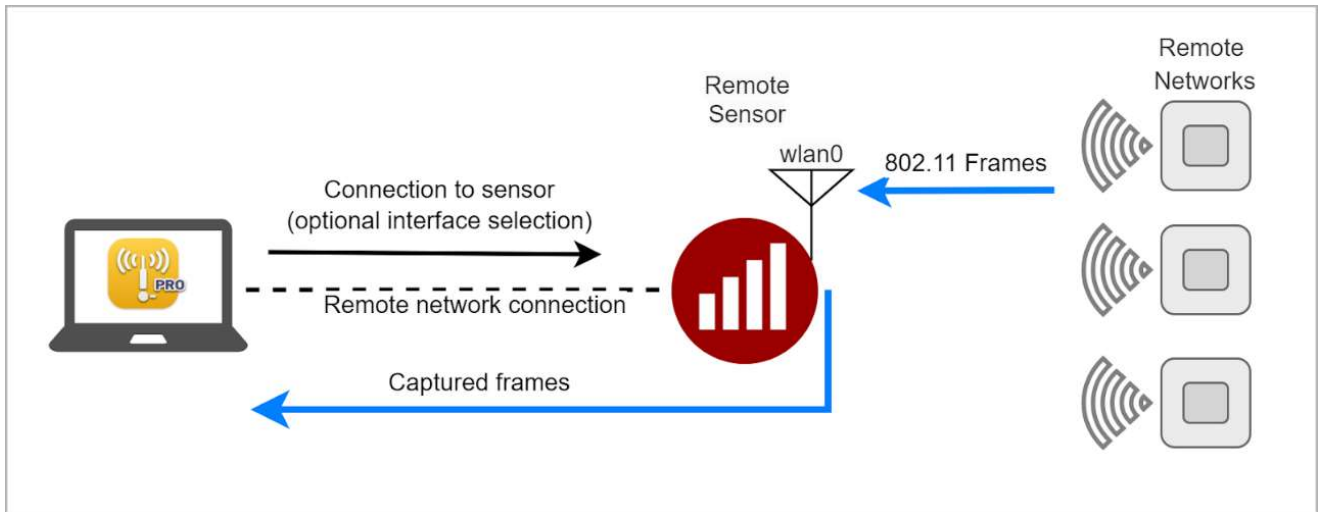


Figure 4-18 - Remote sensor operation

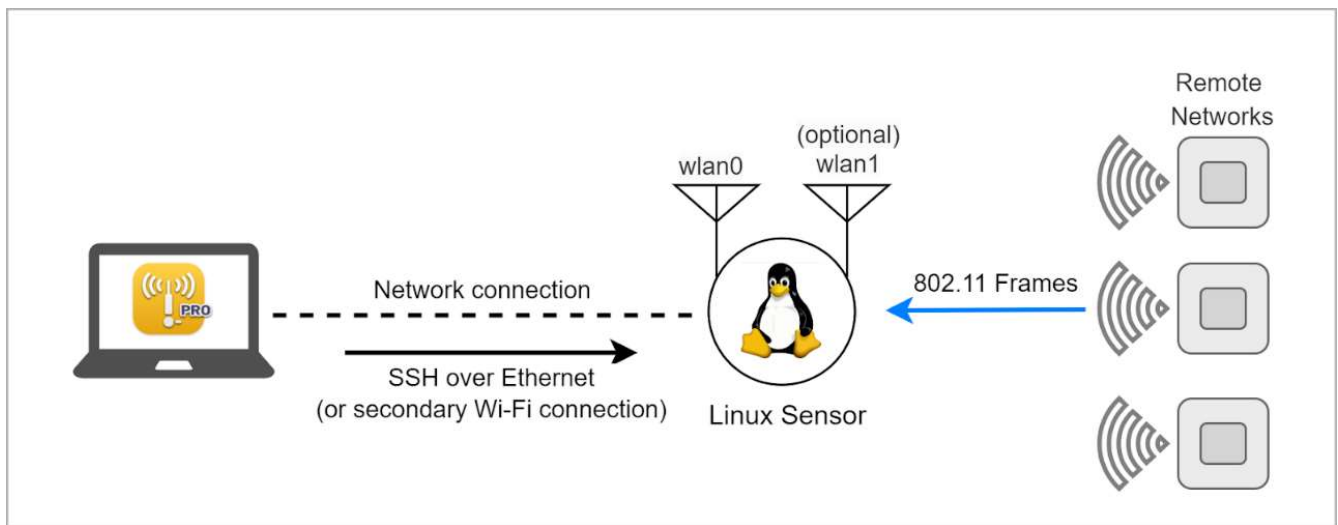


Figure 4-19 - Linux sensor overview





Figure 4-20 - WLAN Pi Pro, M4 and R4



Figure 4-21 - WLAN Pi NEO2

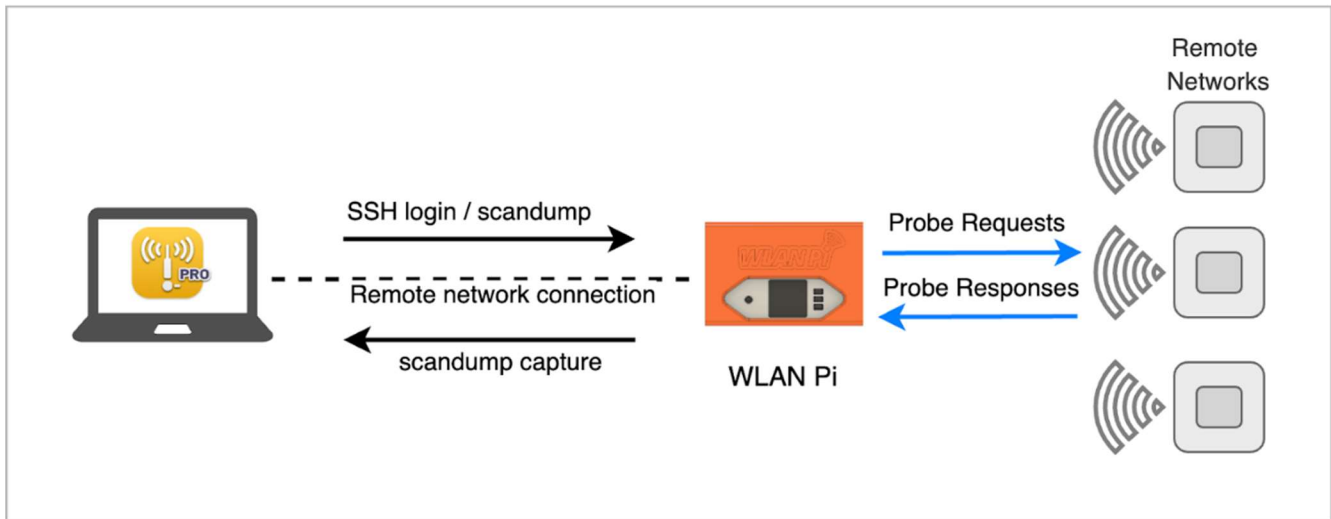


Figure 4-22 - WLAN Pi as a remote sensor using active scanning

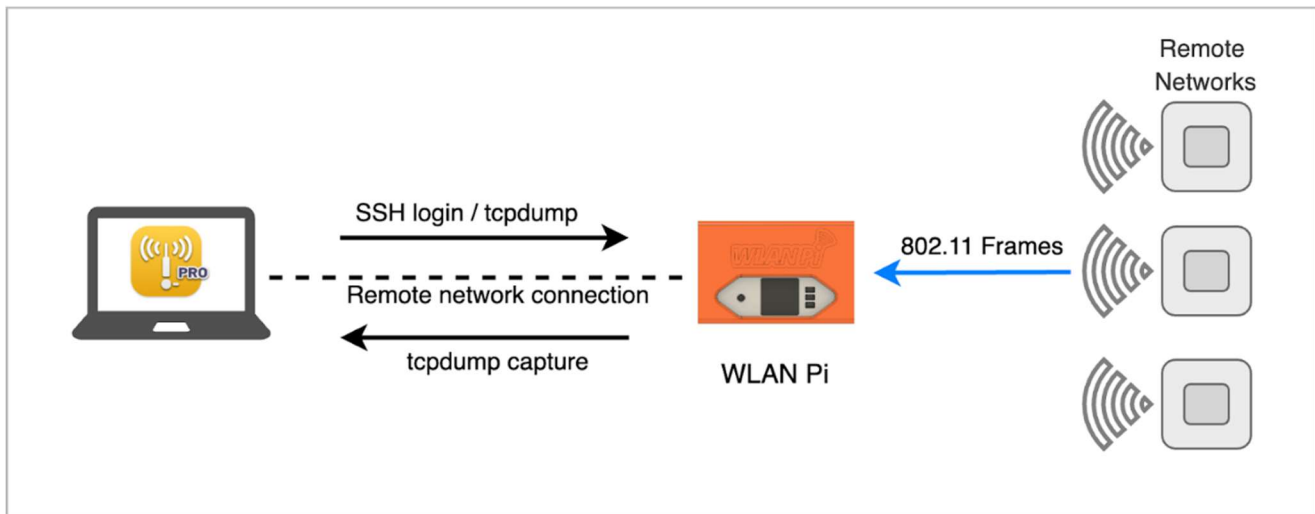


Figure 4-23 - WLAN Pi as a remote sensor using passive scanning

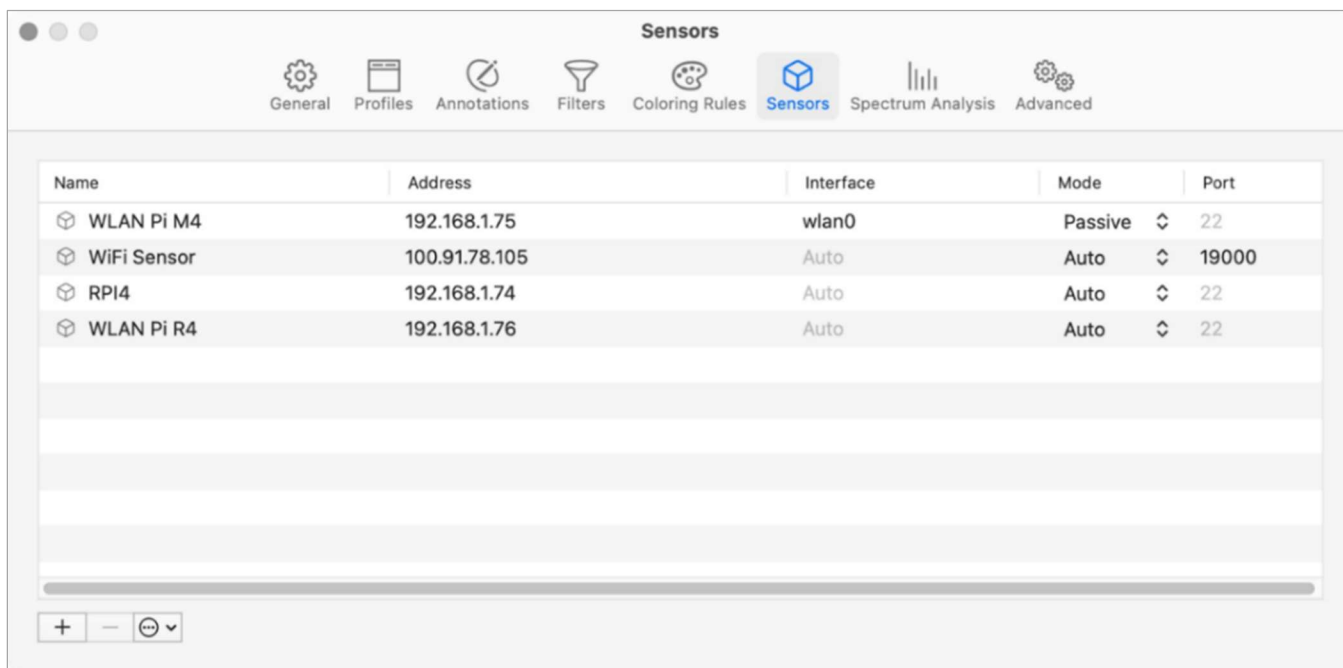


Figure 4-24 - Sensor management panel showing WLAN Pi sensors

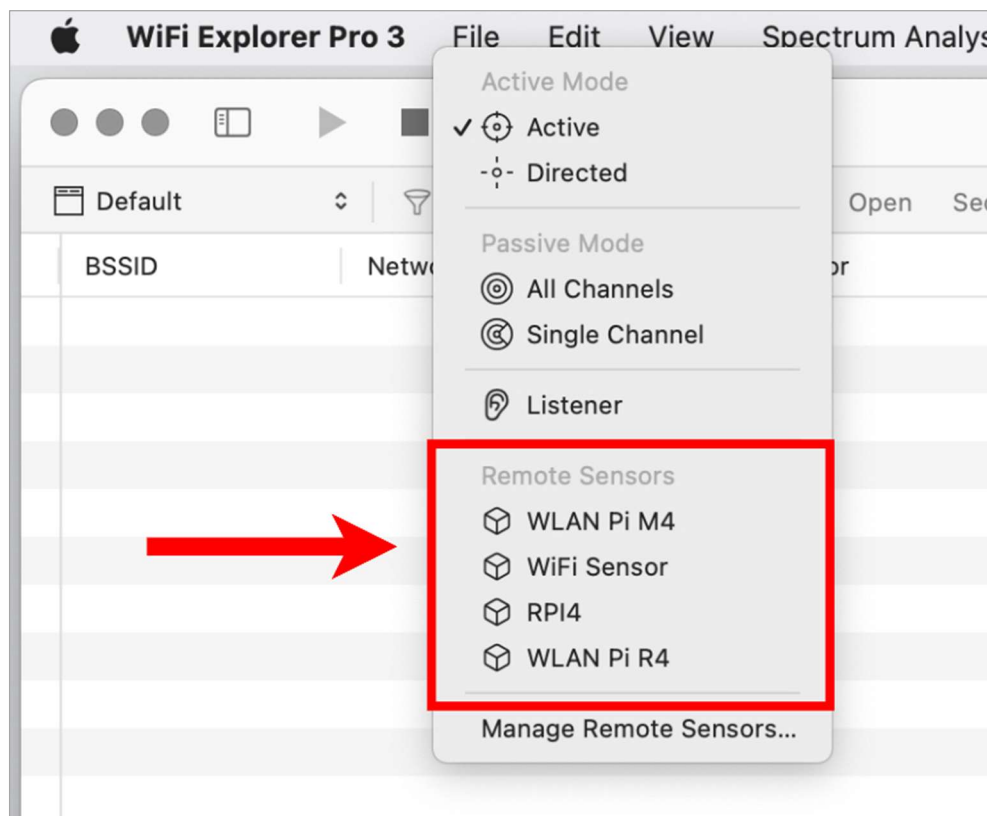


Figure 4-25 - WFE Pro 3 scan mode selector showing WLAN Pi sensors

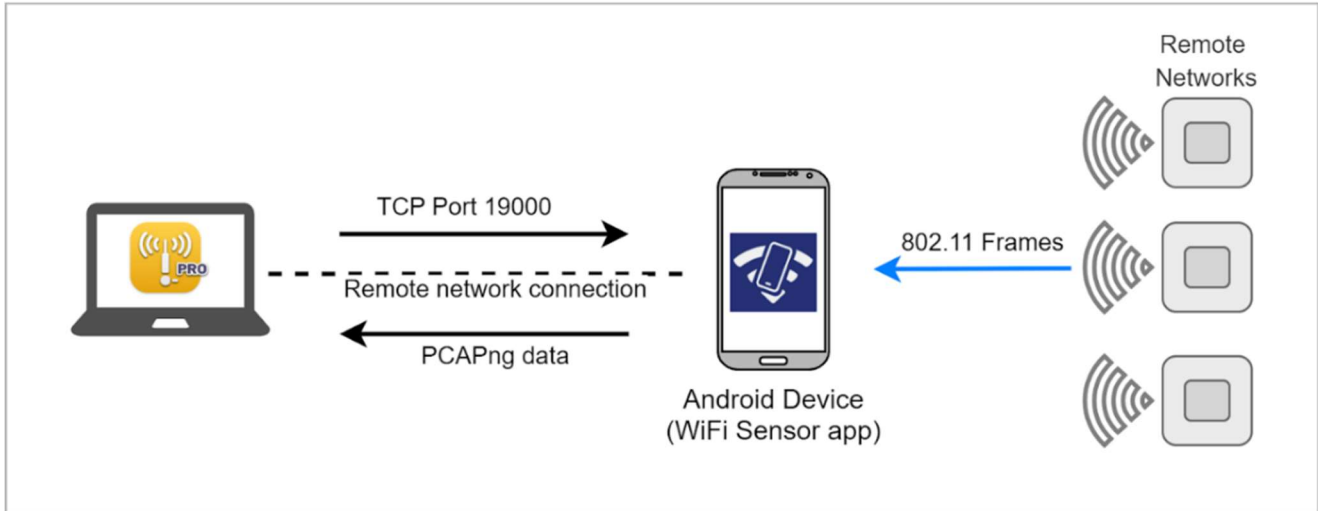


Figure 4-26 - WiFi Sensor app as a remote sensor

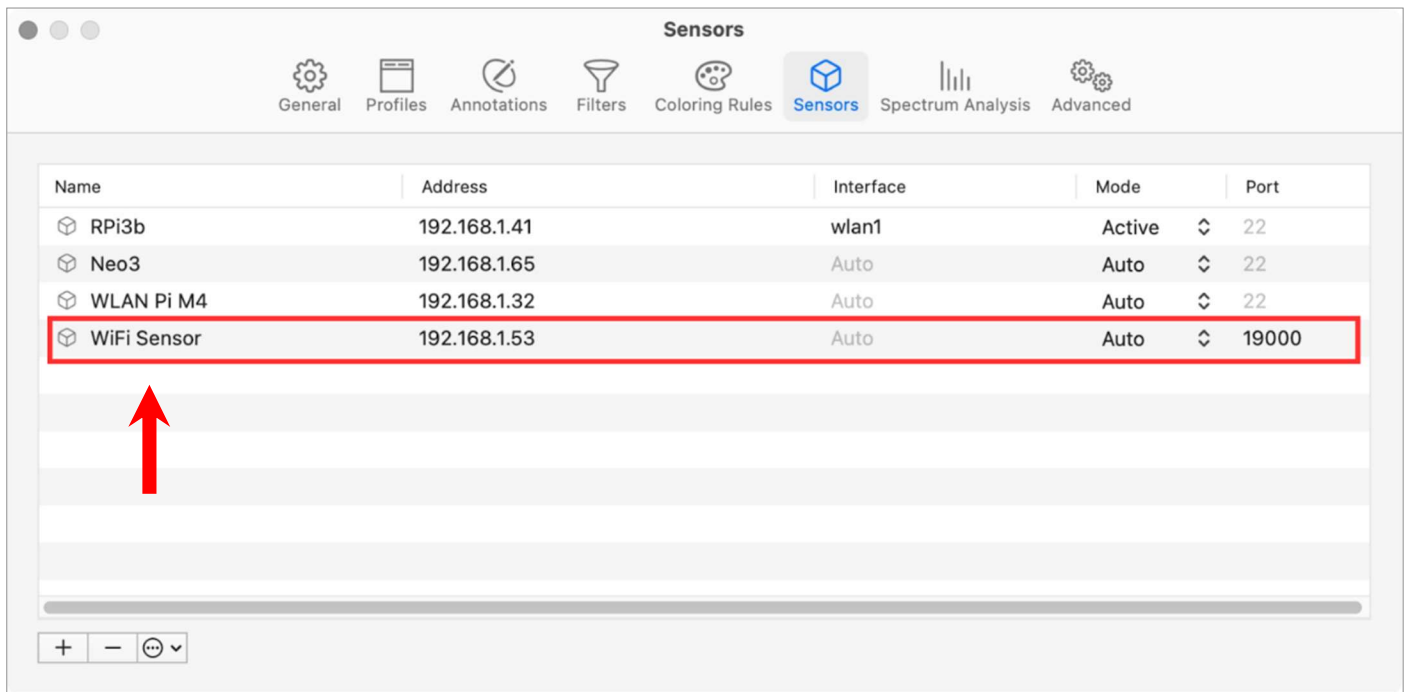


Figure 4-27 - WiFi Sensor Android device added to WFE Pro 3 sensor list

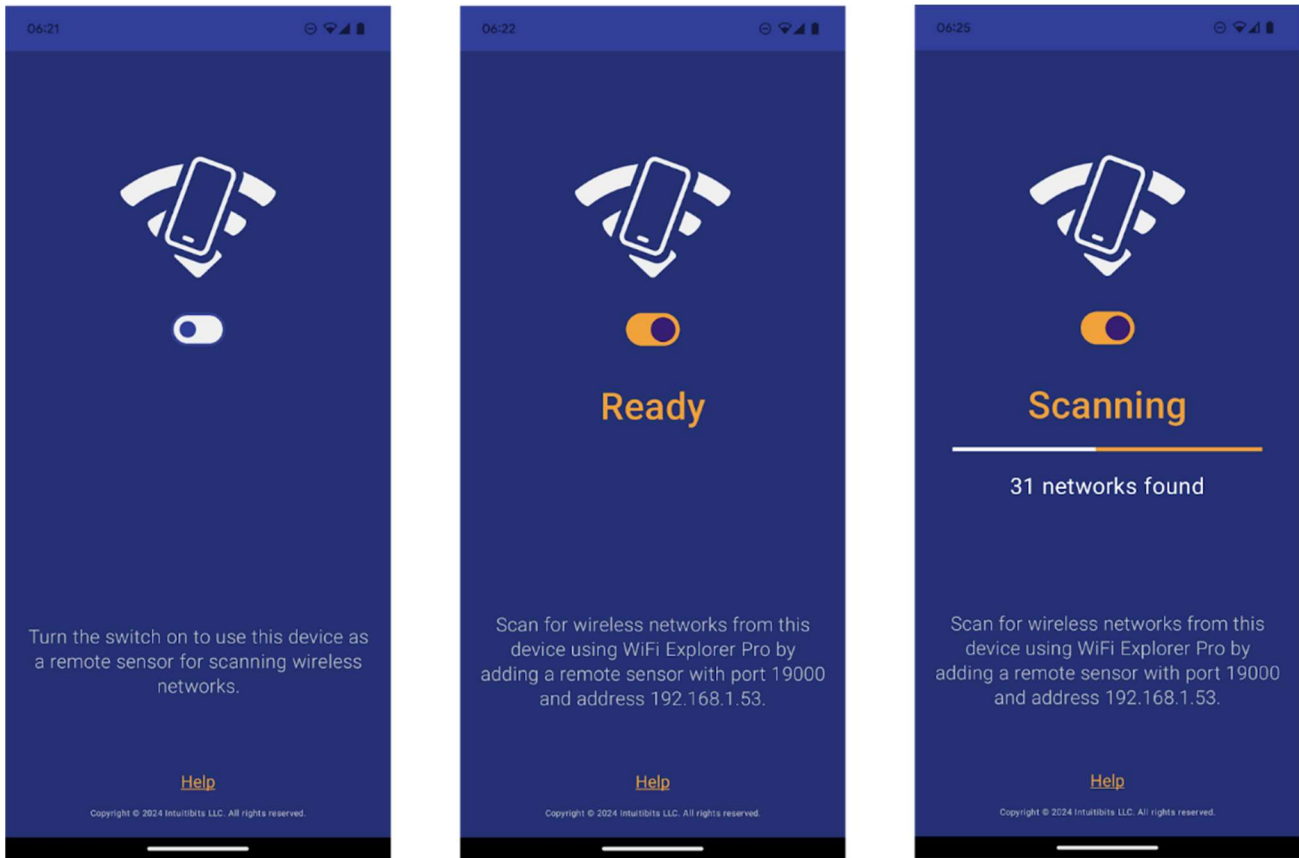


Figure 4-28 - WiFi Sensor app operation

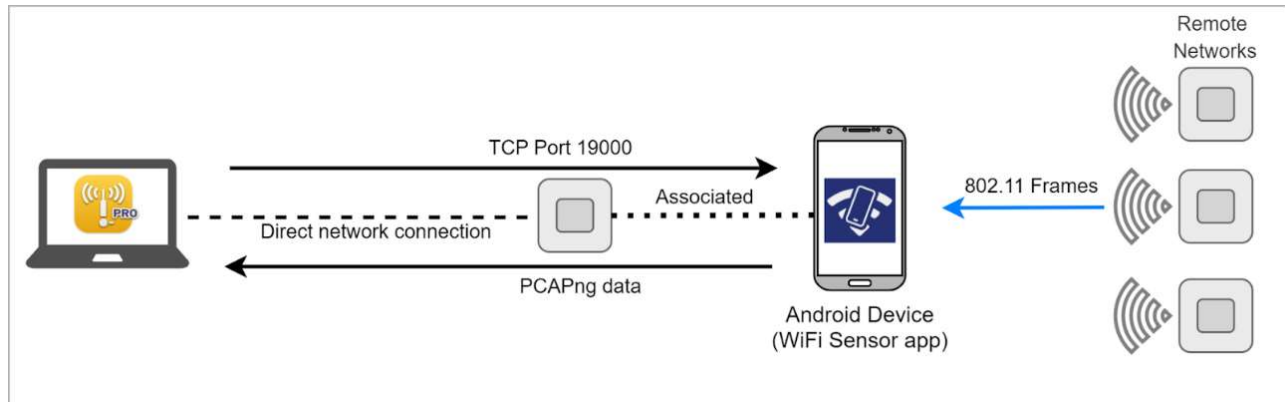


Figure 4-29 - WiFi Sensor direct connectivity

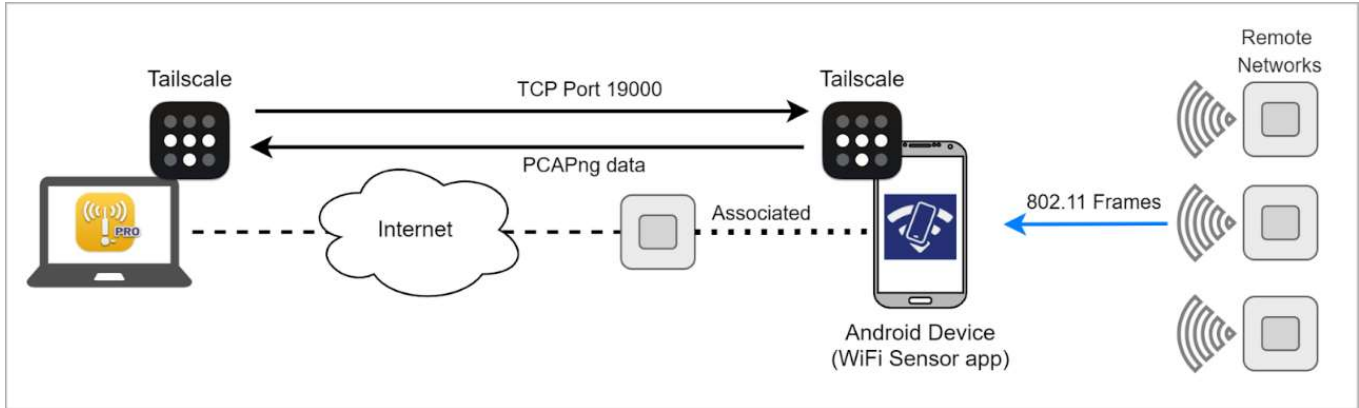


Figure 4-30 - WiFi Sensor VPN connectivity (local Wi-Fi connection)

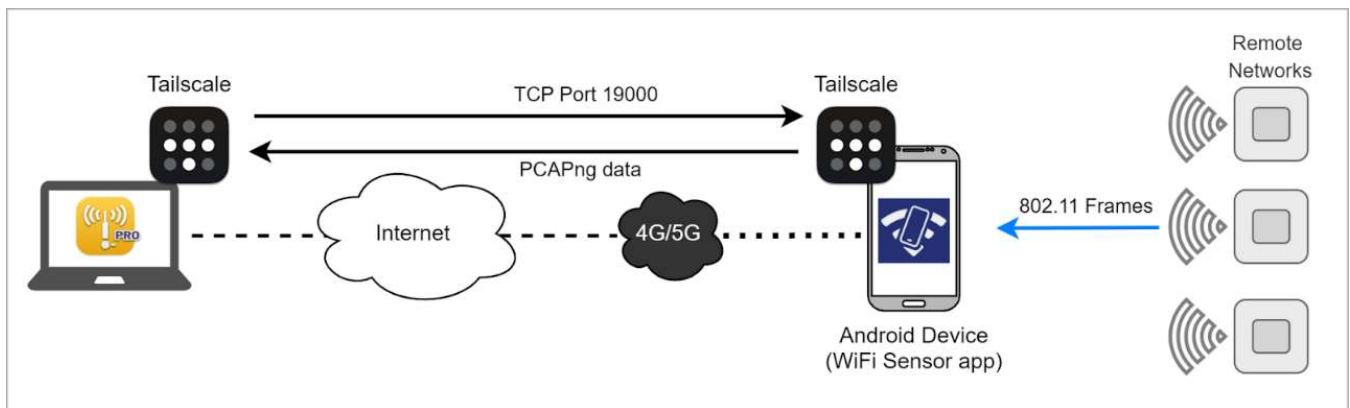


Figure 4-31 - WiFi Sensor VPN connectivity (cellular connection)

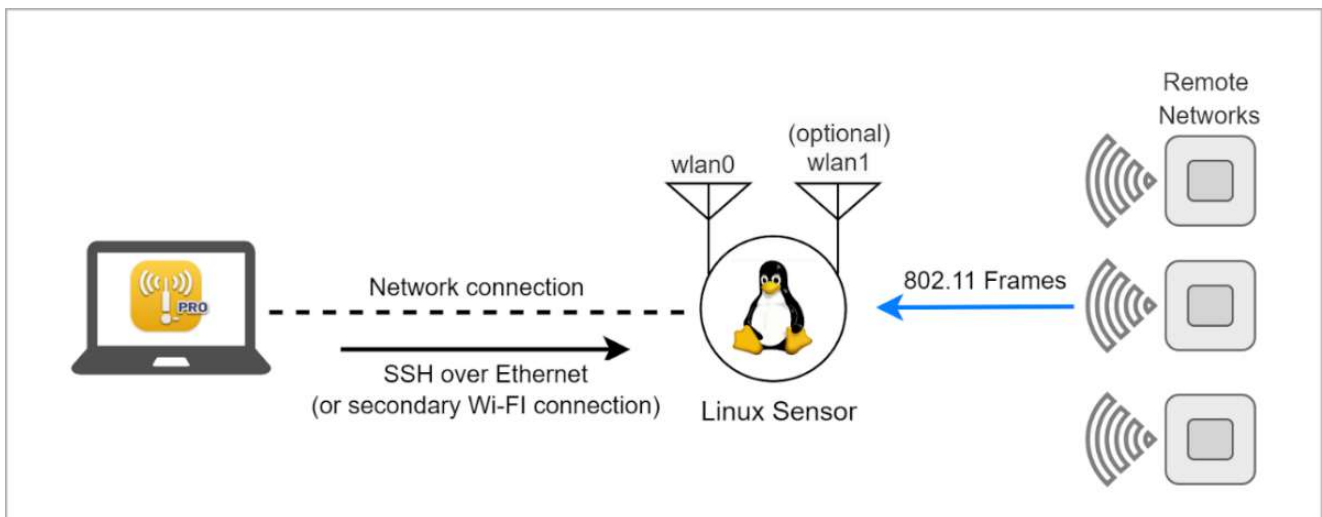


Figure 4-32 - Linux sensor overview

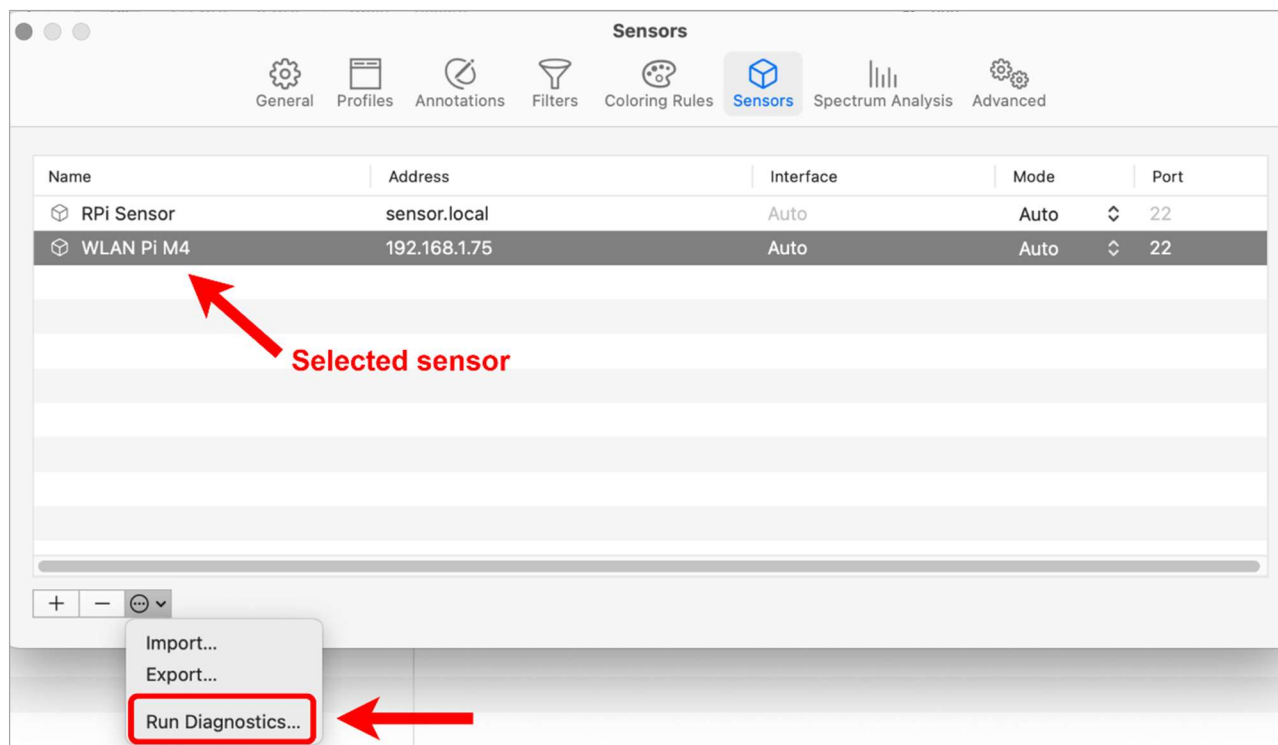


Figure 4-33 - Remote sensor diagnostics

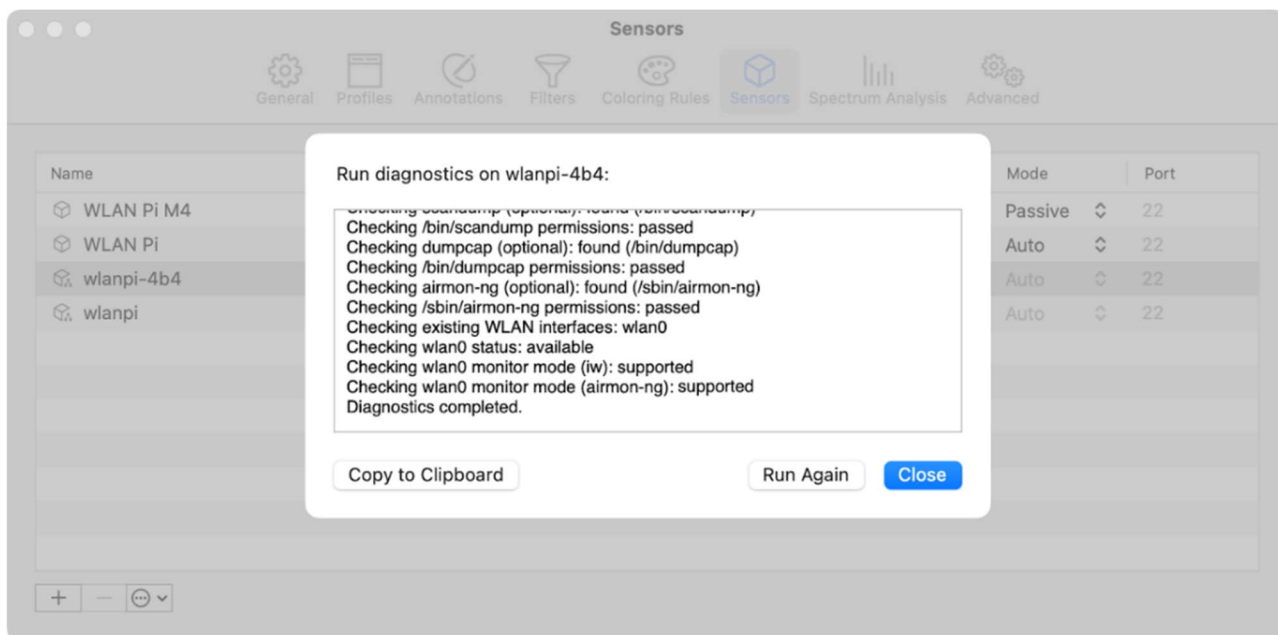


Figure 4-34 - Remote sensor diagnostics results

Members

Switch to new Members list

Search (Address / Name)

Display Filter

Authorized  Inactive 1

Not Authorized  Active 1

Bridges  Hidden 0

Sort By

Address  Name

< 1-2 / 2 >

Auth?	Address	Name/Description	Managed IPs	Last Seen	Version	Physical IP
<input checked="" type="checkbox"/>	372a95ed42 <small>da:bc:d5:a7:eb:c8</small>	Pixel6 (WiFi Sensor) <small>(description)</small>	<small>fd83:048a:0632:ff8b:db99:9337:2a95:ed42</small> 10.147.17.217 + 10.147.17.x	1 MINUTE	1.14.0	82.132.247.159
<input checked="" type="checkbox"/>	d3bd326b7d <small>da:58:42:00:6d:f7</small>	MBP(WFE Pro 3) <small>(description)</small>	<small>fd83:048a:0632:ff8b:db99:93d3:bd32:6b7d</small> 10.147.17.181 + 10.147.17.x	37 MINUTES	1.12.2	81.98.195.90

< 1-2 / 2 >

E-Mail Join Instructions  Invite

Manually Add Member  Add New Member

> Members Help

Figure 4-35 - ZeroTier dashboard showing WFE Pro 3 and WiFi Sensor endpoints



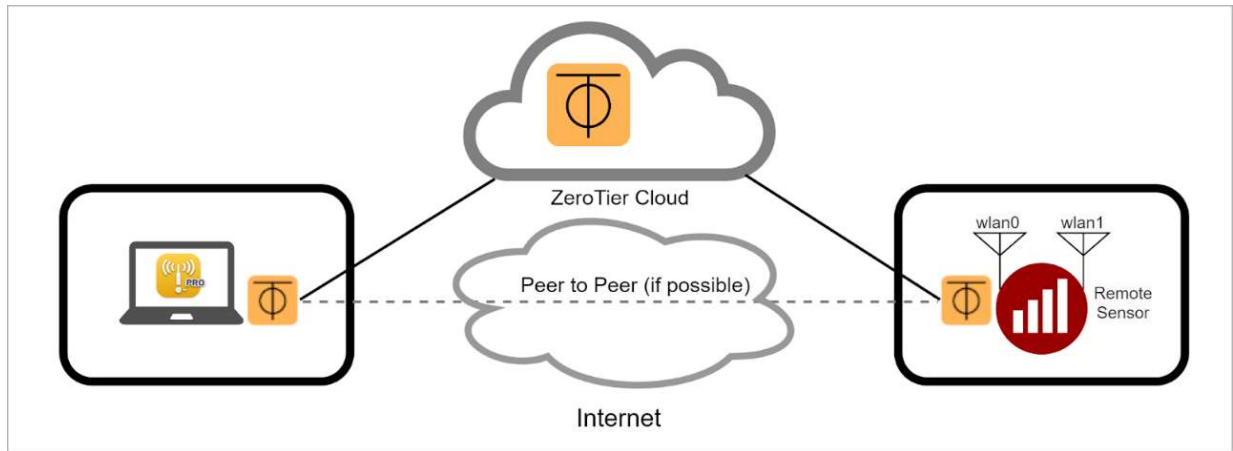


Figure 4-36 - ZeroTier Connectivity

co.uk Download Support Docs N

Machines Apps Services Users Access controls Logs DNS Settings Get started

## Machines

Manage the devices connected to your tailnet. [Learn more](#) Add device

Need ideas for getting started? v

Filters v ↓

2 machines

MACHINE	ADDRESSES <span style="font-size: 0.8em;">⌵</span>	VERSION	LAST SEEN	
<b>mbp-wfe-pro-3</b> <span style="font-size: 0.8em;">co.uk</span>	100.117.201.76 <span style="font-size: 0.8em;">v</span>	1.70.0 macOS 12.7.5	<span style="color: green;">●</span> Connected	<span style="border: 1px solid #ccc; border-radius: 50%; padding: 2px 5px;">...</span>
<b>pixel-6-wifi-sensor</b> <span style="font-size: 0.8em;">co.uk</span>	100.91.78.105 <span style="font-size: 0.8em;">v</span>	1.70.0 Android 14	<span style="color: green;">●</span> Connected	<span style="font-size: 0.8em;">...</span>

Figure 4-37 - Tailscale dashboard showing WFE Pro 3 and WiFi Sensor endpoints

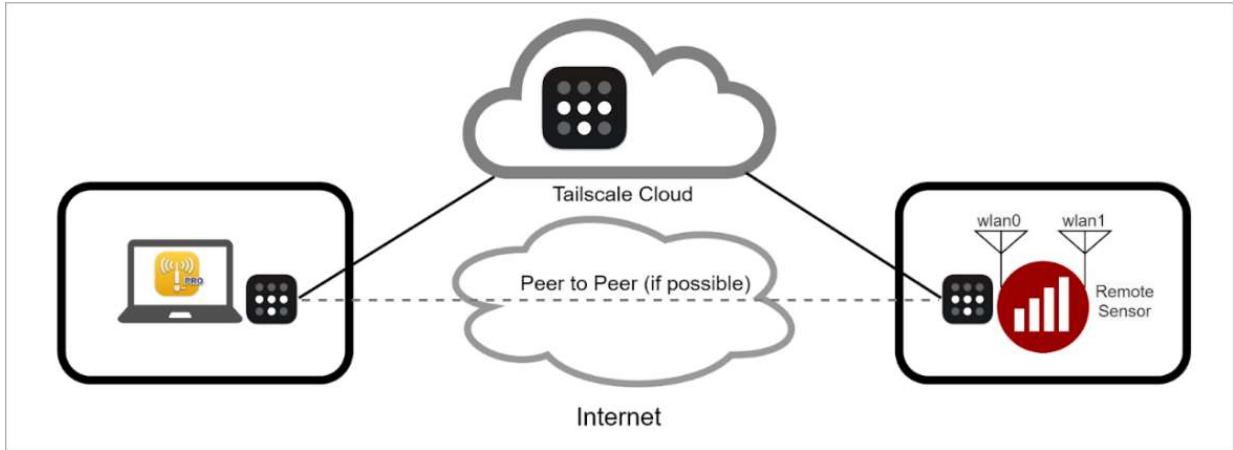


Figure 4-38 - Tailscale Connectivity

## Chapter 5 - Data Import From External Systems

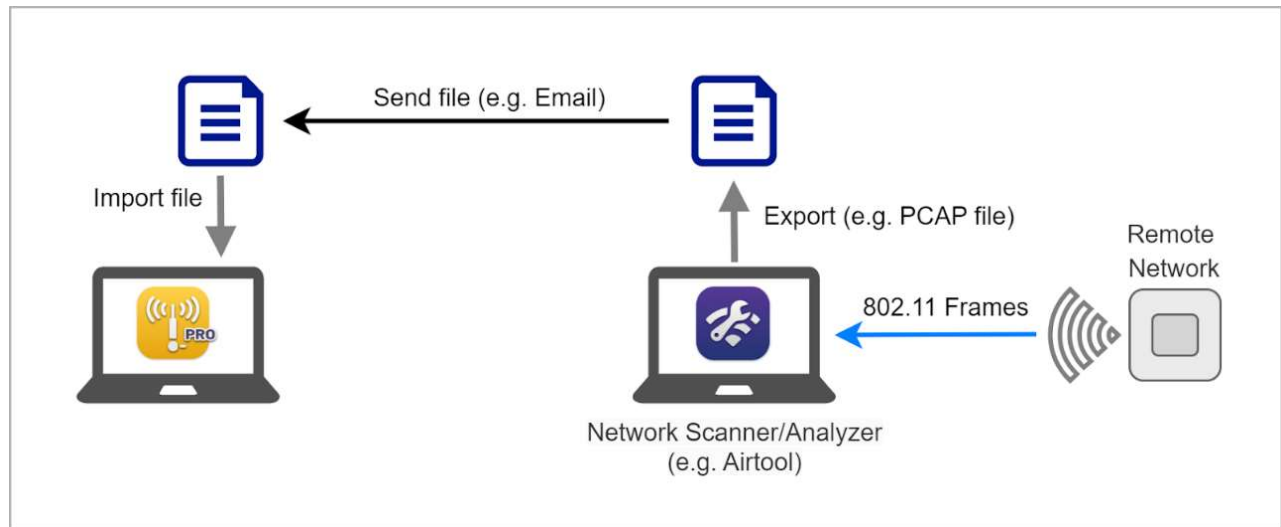


Figure 5-1 - Data import from frame capture application/utility

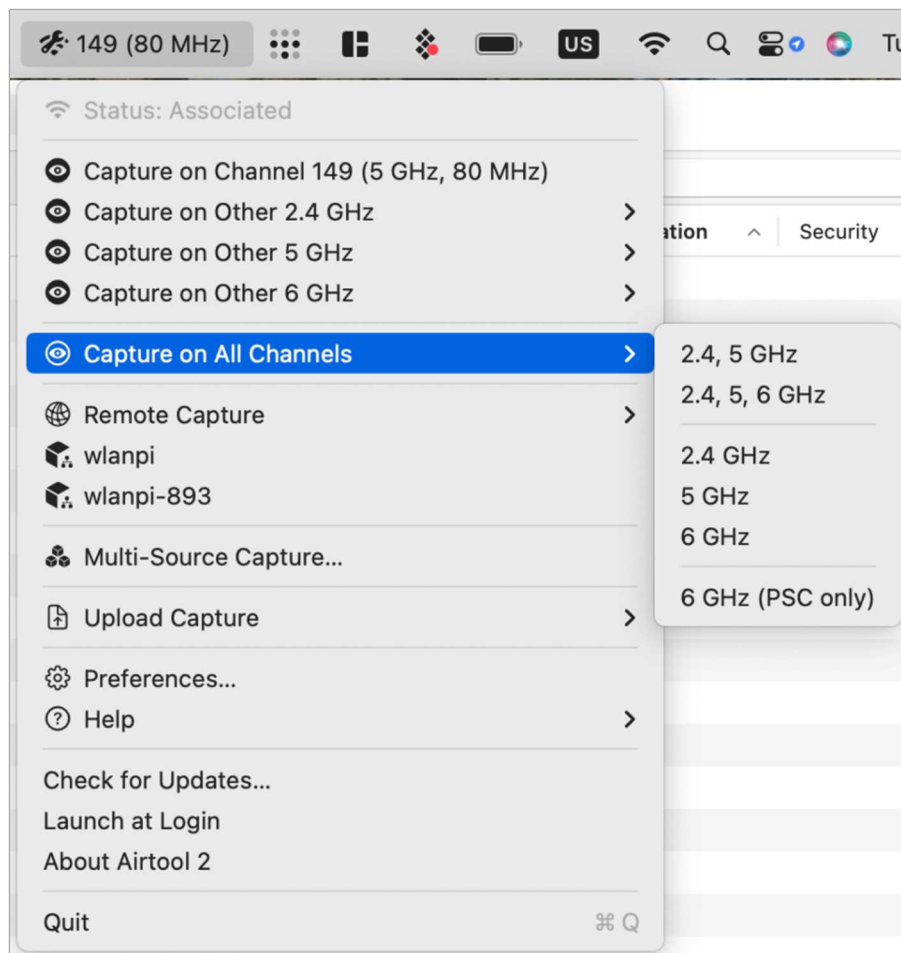


Figure 5-2 - Airtool 2 multi-channel scanning option

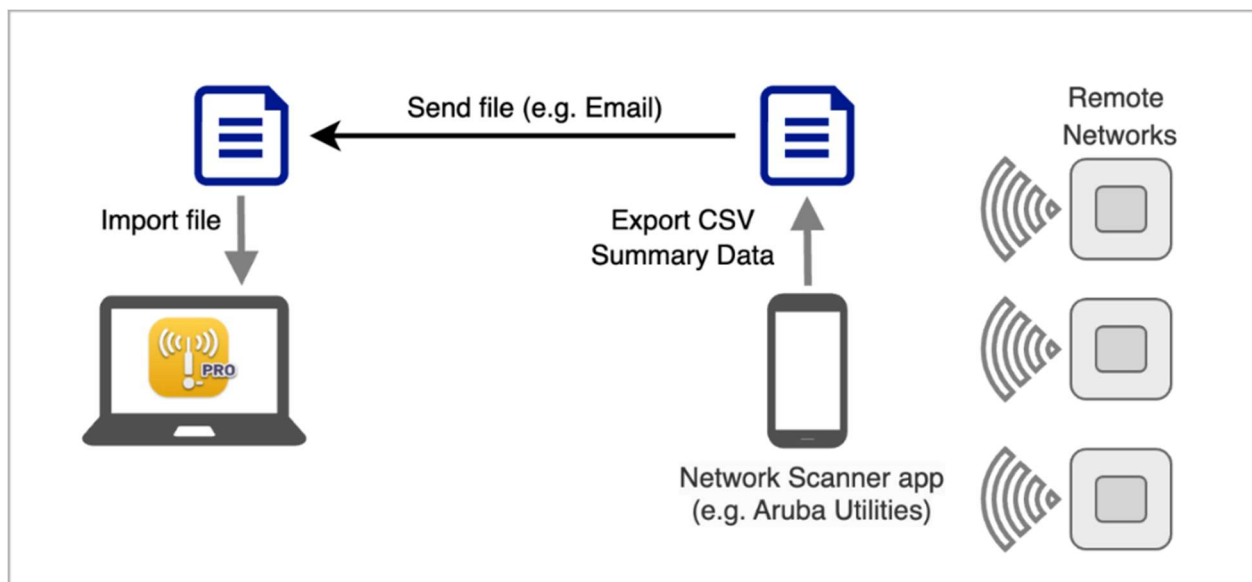


Figure 5-3 - Data import from a network scanner app

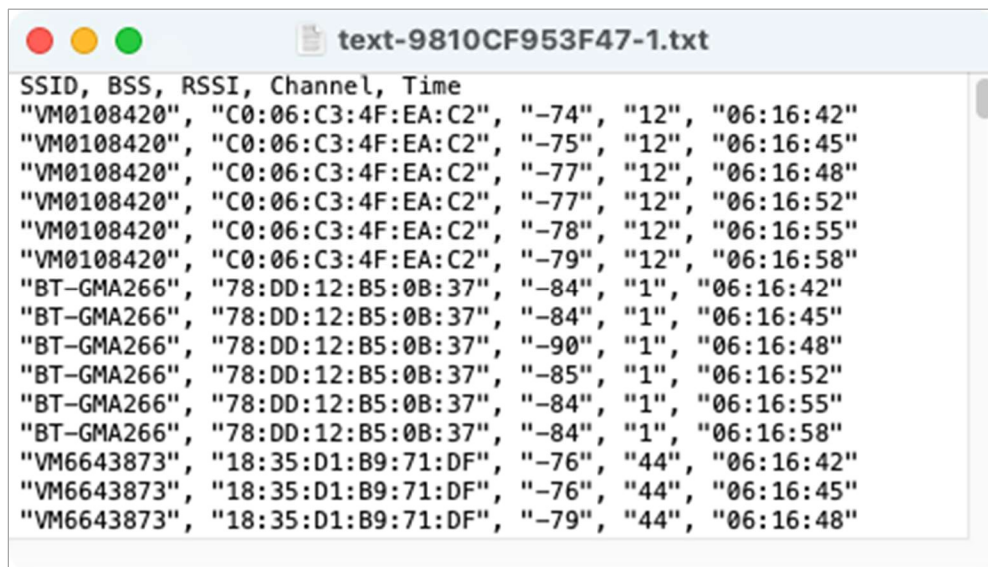


Figure 5-4 - Exported CSV data sample

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

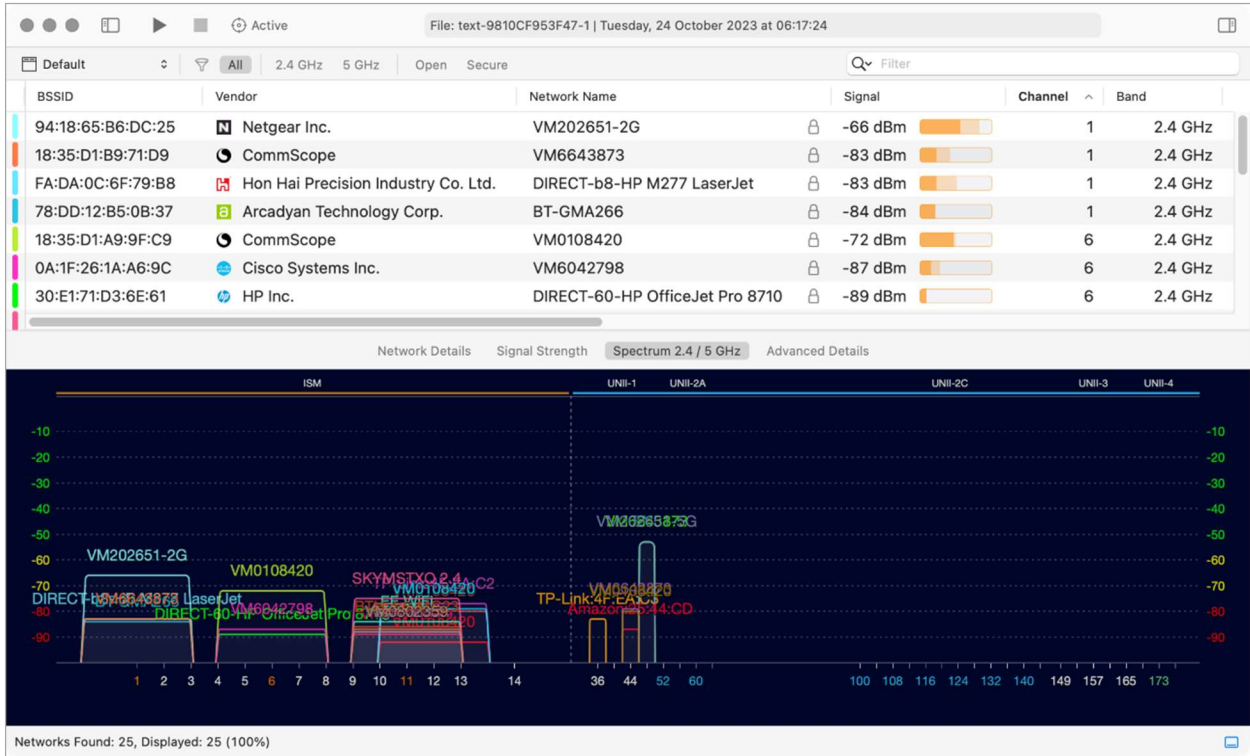


Figure 5-5 - WFE Pro 3 displaying imported CSV data (AirPort Utility)

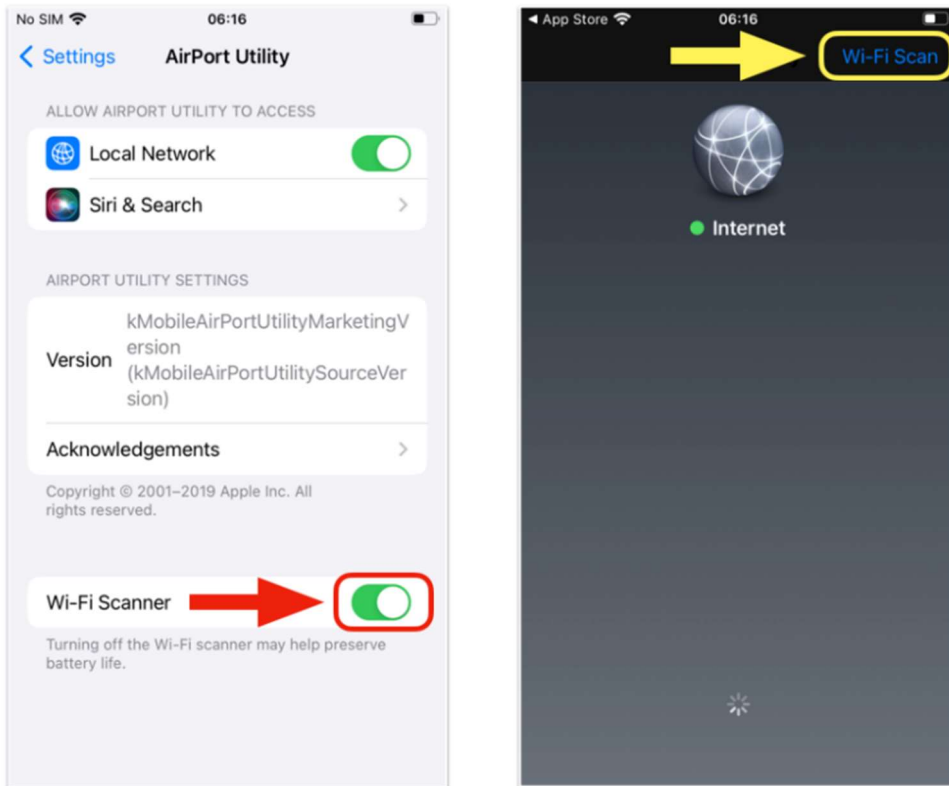


Figure 5-6 - Apple AirPort Utility setup #1

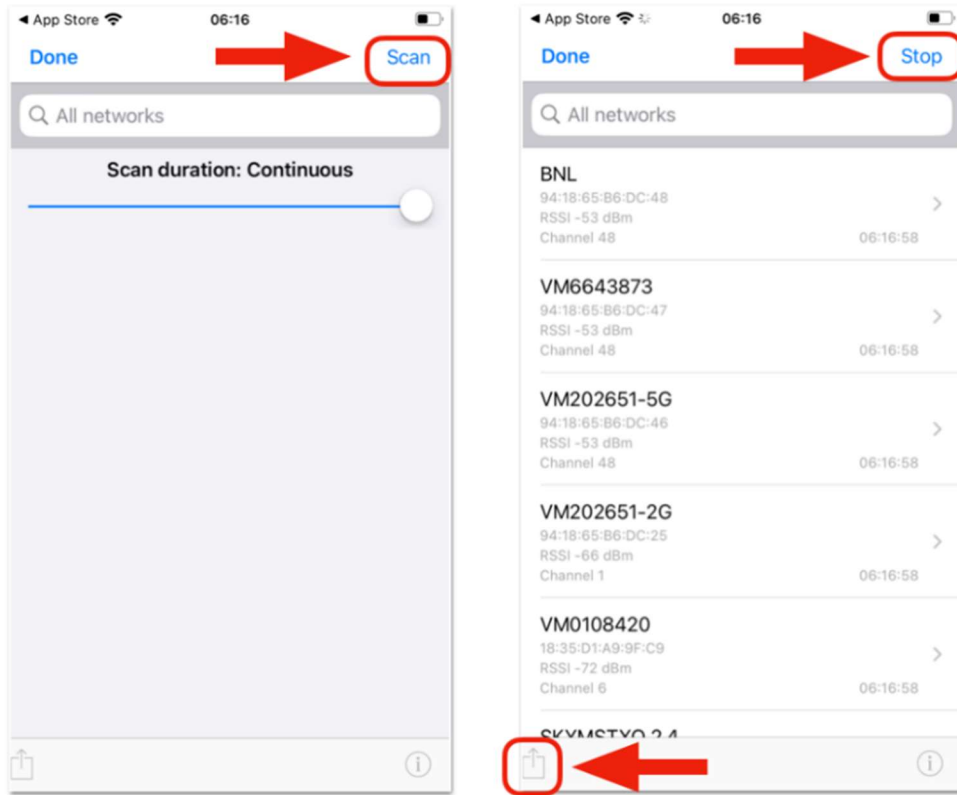


Figure 5-7 - Apple AirPort Utility setup #2

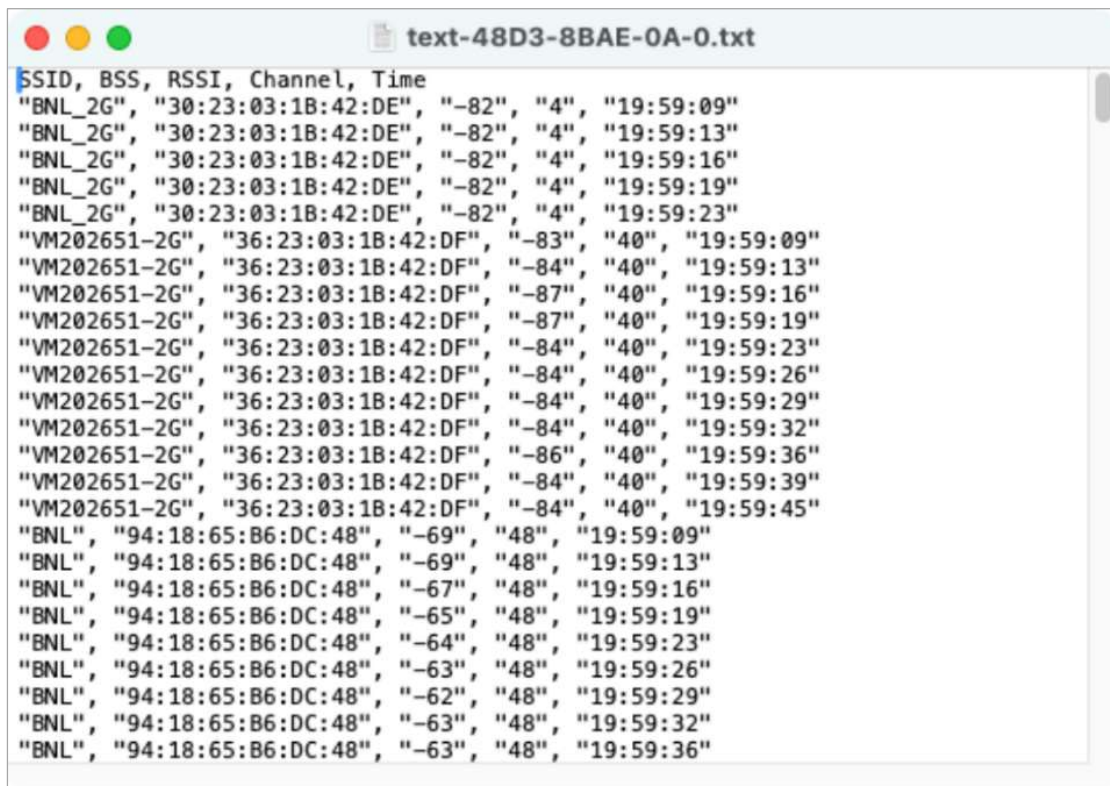


Figure 5-8 - Raw CSV data from AirPort Utility



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

BSSID	Network Name	Vendor	Channel	Band	Signal	Noise (Approx)	SNR (Approx)
94:18:65:B6:DC:48	BNL	Netgear Inc.	48	5 GHz	-62 dBm	-96 dBm	34 dB
1E:48:BE:25:44:CD	Hidden Network	Amazon Technol...	44	5 GHz	-72 dBm	-96 dBm	24 dB
18:35:D1:A9:9F:C9	VM0108420	CommScope	11	2.4 GHz	-73 dBm	-96 dBm	23 dB
18:35:D1:B9:71:D9	VM6643873	CommScope	6	2.4 GHz	-75 dBm	-96 dBm	21 dB
FA:DA:0C:6F:79:B8	DIRECT-...7 LaserJet	Hon Hai Precisi...	6	2.4 GHz	-78 dBm	-96 dBm	18 dB
C6:06:C3:4F:EA:C2	Hidden Network	TP-Link Technol...	9	2.4 GHz	-79 dBm	-96 dBm	17 dB
02:68:EB:44:88:B8	DIRECT-...Pro 8020	HP Inc.	6	2.4 GHz	-80 dBm	-96 dBm	16 dB
C0:06:C3:4F:EA:C2	VM0108420	TP-Link Technol...	9	2.4 GHz	-80 dBm	-96 dBm	16 dB
18:35:D1:B9:71:DF	VM6643873	CommScope	44	5 GHz	-80 dBm	-96 dBm	16 dB
36:23:03:1B:42:DE	VM202651-2G	Belkin Internatio...	4	2.4 GHz	-81 dBm	-96 dBm	15 dB
3A:23:03:1B:42:DE	Hidden Network	Belkin Internatio...	4	2.4 GHz	-82 dBm	-96 dBm	14 dB
30:23:03:1B:42:DE	BNL_2G	Belkin Internatio...	4	2.4 GHz	-82 dBm	-96 dBm	14 dB
C6:06:C3:4F:EB:DA	Hidden Network	TP-Link Technol...	9	2.4 GHz	-83 dBm	-96 dBm	13 dB
C0:06:C3:4F:EB:DA	VM0108420	TP-Link Technol...	9	2.4 GHz	-83 dBm	-96 dBm	13 dB
18:83:BF:34:67:E3	BTHub5-MG23	Arcadyan Techno...	1	2.4 GHz	-84 dBm	-96 dBm	12 dB
30:23:03:1B:42:DF	VM202651-5G	Belkin Internatio...	40	5 GHz	-84 dBm	-96 dBm	12 dB
36:23:03:1B:42:DF	VM202651-2G	Belkin Internatio...	40	5 GHz	-84 dBm	-96 dBm	12 dB
5A:83:BF:34:67:E5	EE WIFI-X		1	2.4 GHz	-85 dBm	-96 dBm	11 dB

Figure 5-9 - AirPort Utility data displayed in WFE Pro 3

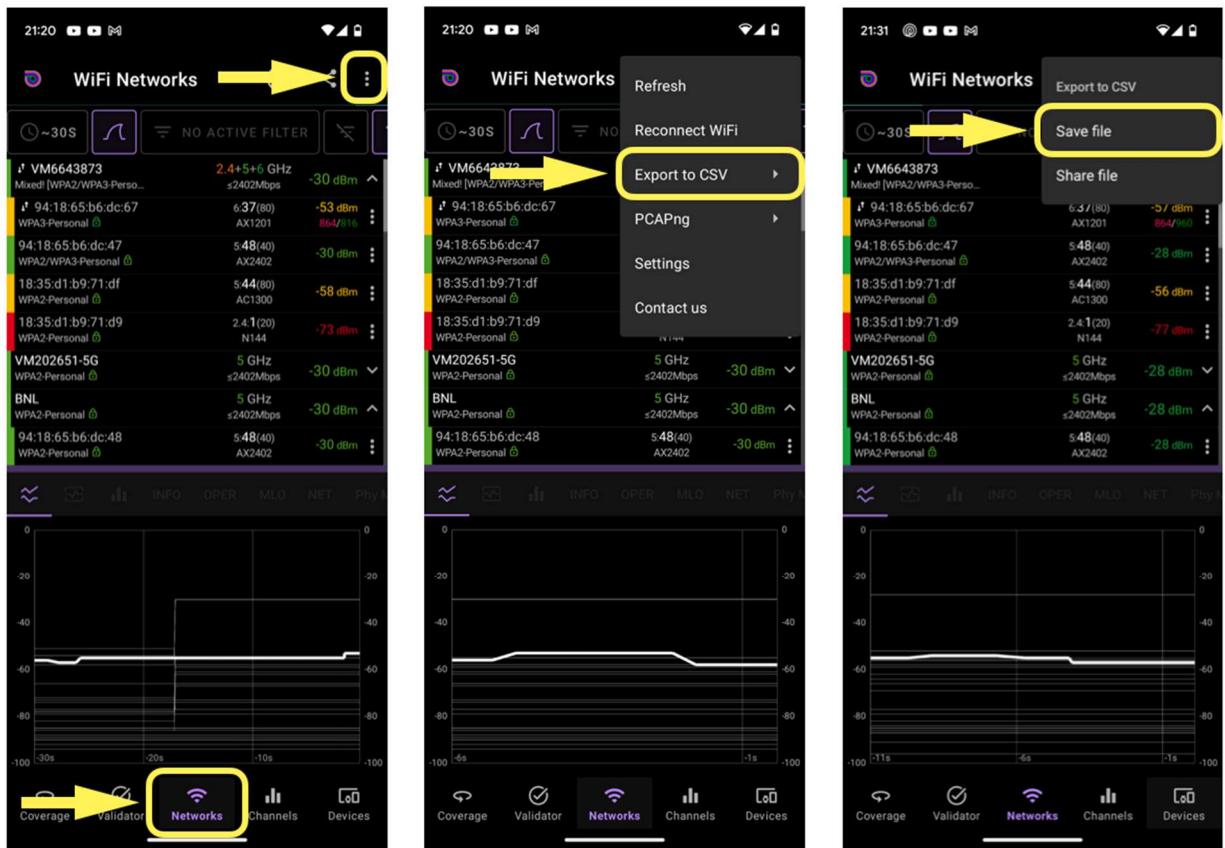


Figure 5-10 - Analiti CSV export process



## WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

File: analiti\_wifi\_signals\_snapshot\_1698181078610 | Tuesday, 24 October 2023 at 22:00:08

Analiti CSV | All | 2.4 GHz | 5 GHz | 6 GHz | Open | Secure | Filter

BSSID	Network Name	Vendor	Band	Channel	Channel Width	Security	Signal
94:18:65:B6:DC:46	VM202651-5G	Netgear Inc.	5 GHz	48	40 MHz	WPA2 (PSK)	-46 dBm
94:18:65:B6:DC:48	BNL	Netgear Inc.	5 GHz	48	40 MHz	WPA2 (PSK)	-46 dBm
94:18:65:B6:DC:47	VM6643873	Netgear Inc.	5 GHz	48	40 MHz	WPA2/WPA3 (PSK/SAE)	-47 dBm
94:18:65:B6:DC:25	VM202651-2G	Netgear Inc.	2.4 GHz	1	20 MHz	WPA2 (PSK)	-51 dBm
94:18:65:B6:DC:67	VM6643873	Netgear Inc.	6 GHz	37	80 MHz	WPA3 (SAE)	-51 dBm
94:18:65:B6:DC:62	WLANPi_Test_6GHz	Netgear Inc.	6 GHz	37	80 MHz	WPA3 (SAE)	-55 dBm
FA:DA:0C:6F:79:B8	DIRECT-...7 LaserJet	Hon Hai Precisi...	2.4 GHz	1	20 MHz	WPA2 (PSK)	-64 dBm
18:35:D1:A9:9F:C9	VM0108420	CommScope	2.4 GHz	6	20 MHz	WPA2 (PSK)	-71 dBm
18:35:D1:B9:71:D9	VM6643873	CommScope	2.4 GHz	1	20 MHz	WPA2 (PSK)	-74 dBm
C0:06:C3:4F:EA:C2	VM0108420	TP-Link Technol...	2.4 GHz	12	40 MHz	WPA2 (PSK)	-74 dBm
18:35:D1:A9:9F:CF	VM0108420	CommScope	5 GHz	44	80 MHz	WPA2 (PSK)	-77 dBm
C0:06:C3:4F:EA:C3	VM0108420	TP-Link Technol...	5 GHz	36	80 MHz	WPA2 (PSK)	-79 dBm
18:35:D1:B9:71:DF	VM6643873	CommScope	5 GHz	44	80 MHz	WPA2 (PSK)	-79 dBm
3C:45:7A:BD:90:1A	SKYMSTXQ 2.4	Sky	2.4 GHz	11	20 MHz	WPA2 (PSK)	-80 dBm
C0:06:C3:4F:EB:DA	Hidden Network	TP-Link Technol...	2.4 GHz	12	40 MHz	WPA2 (PSK)	-81 dBm
D2:06:C3:4F:EB:DA	VM0108420	TP-Link Technol...	2.4 GHz	12	40 MHz	WPA2 (PSK)	-81 dBm
78:DD:12:B5:0B:37	BT-GMA266	Arcadyan Techno...	2.4 GHz	1	20 MHz	WPA2 (PSK)	-83 dBm
D2:06:C3:4F:EB:DB	VM0108420	TP-Link Technol...	5 GHz	36	80 MHz	WPA2 (PSK)	-84 dBm

Networks Found: 20, Displayed: 20 (100%)

Figure 5-11 - Analiti data displayed in WFE Pro 3

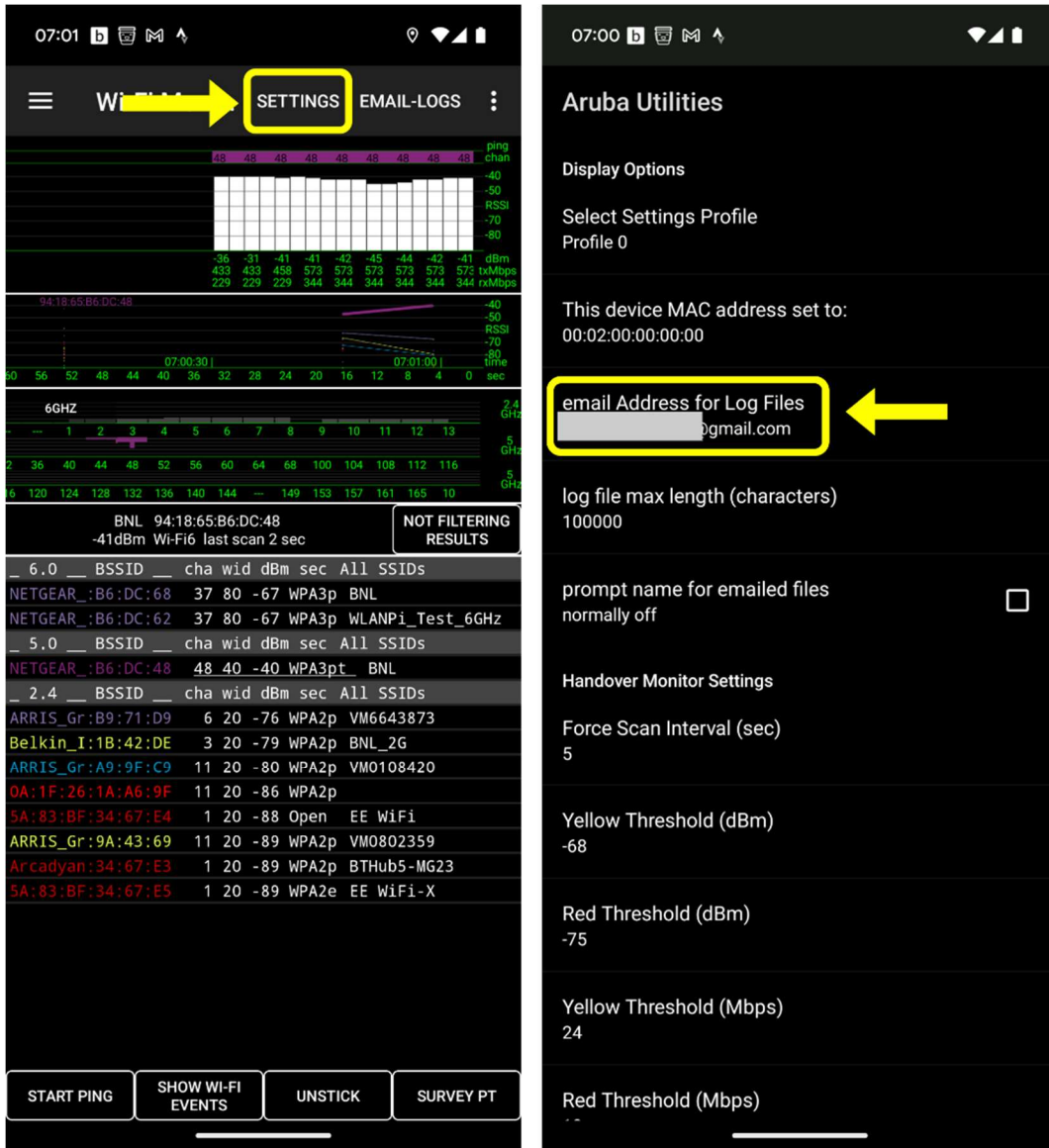


Figure 5-12 - Aruba Utilities network scan and export process #1

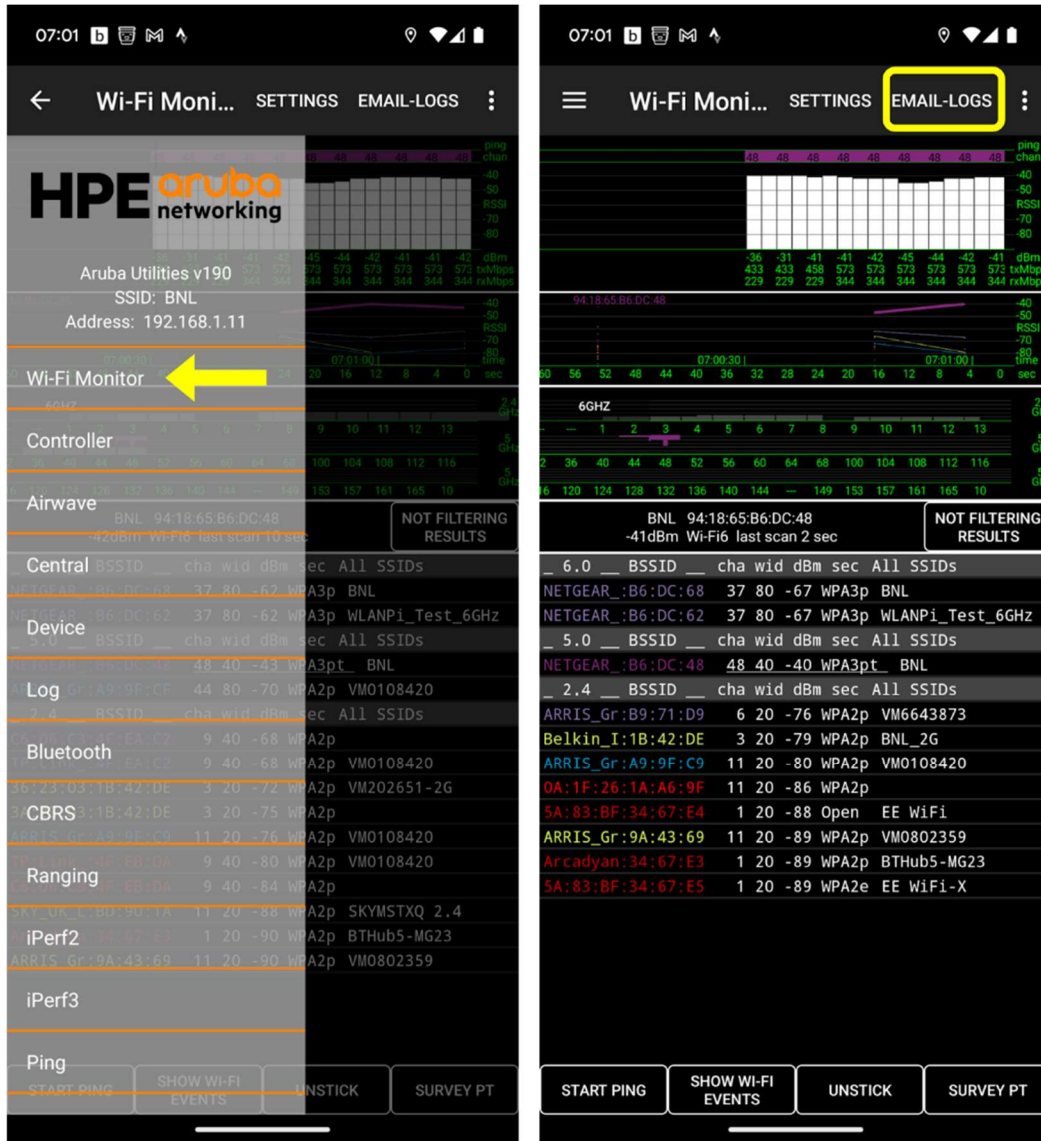


Figure 5-13 - Aruba Utilities network scan and export process #2

## WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

The screenshot displays the 'Aruba Utilities' window in WiFi Explorer Pro 3. The window title is 'File: ArubaUtilitiesCsvScanFile\_2024\_0802\_073237\_ | Friday, 2 August 2024 at 07:33:39'. The interface shows a list of 27 detected networks. The columns are: BSSID, Network Name, Vendor, Band, Channel, Signal, Noise (Approx), and SNR (Approx). Each row includes a color-coded BSSID, the network name (some are 'Hidden Network'), the vendor logo and name, the band (2.4 GHz or 5 GHz), the channel number, the signal strength in dBm, a signal strength bar, the noise level in dBm, a noise level bar, and the SNR in dB with a corresponding bar. The status bar at the bottom indicates 'Networks Found: 27, Displayed: 27 (100%)'.

BSSID	Network Name	Vendor	Band	Channel	Signal	Noise (Approx)	SNR (Approx)
94:18:65:B6:DC:48	BNL	Netgear Inc.	5 GHz	48	-15 dBm	-96 dBm	81 dB
18:35:D1:A9:9F:CF	VM0108420	CommScope	5 GHz	44	-53 dBm	-96 dBm	43 dB
C6:06:C3:4F:EA:C3	Hidden Network	TP-Link Technol...	5 GHz	36	-54 dBm	-96 dBm	42 dB
C0:06:C3:4F:EA:C3	VM0108420	TP-Link Technol...	5 GHz	36	-54 dBm	-96 dBm	42 dB
94:18:65:B6:DC:62	WLANPI_Test_6GHz	Netgear Inc.	5 GHz	37	-56 dBm	-96 dBm	40 dB
94:18:65:B6:DC:68	BNL	Netgear Inc.	5 GHz	37	-56 dBm	-96 dBm	40 dB
4E:17:44:F9:9C:FC	Hidden Network	Amazon Technol...	5 GHz	44	-56 dBm	-96 dBm	40 dB
1E:48:BE:25:44:CD	Hidden Network	Amazon Technol...	5 GHz	44	-58 dBm	-96 dBm	38 dB
30:23:03:1B:42:DF	VM202651-5G	Belkin Internatio...	5 GHz	108	-58 dBm	-96 dBm	38 dB
36:23:03:1B:42:DF	VM202651-2G	Belkin Internatio...	5 GHz	108	-58 dBm	-96 dBm	38 dB
18:35:D1:B9:71:DF	VM6643873	CommScope	5 GHz	44	-59 dBm	-96 dBm	37 dB
C6:06:C3:4F:EB:EB	Hidden Network	TP-Link Technol...	5 GHz	36	-62 dBm	-96 dBm	34 dB
C0:06:C3:4F:EB:DB	VM0108420	TP-Link Technol...	5 GHz	36	-62 dBm	-96 dBm	34 dB
C0:06:C3:4F:EB:EB	VM0108420	TP-Link Technol...	5 GHz	36	-62 dBm	-96 dBm	34 dB
C6:06:C3:4F:EB:DB	Hidden Network	TP-Link Technol...	5 GHz	36	-63 dBm	-96 dBm	33 dB
C6:06:C3:4F:EA:C2	Hidden Network	TP-Link Technol...	2.4 GHz	9	-73 dBm	-96 dBm	23 dB
C0:06:C3:4F:EA:C2	VM0108420	TP-Link Technol...	2.4 GHz	9	-73 dBm	-96 dBm	23 dB
FA:DA:0C:6F:79:B8	DIRECT-...7 LaserJet	Hon Hai Precisi...	2.4 GHz	6	-76 dBm	-96 dBm	20 dB

Figure 5-14 - Aruba Utilities data displayed in WFE Pro 3



## Chapter 6 - Spectrum Analysis Data

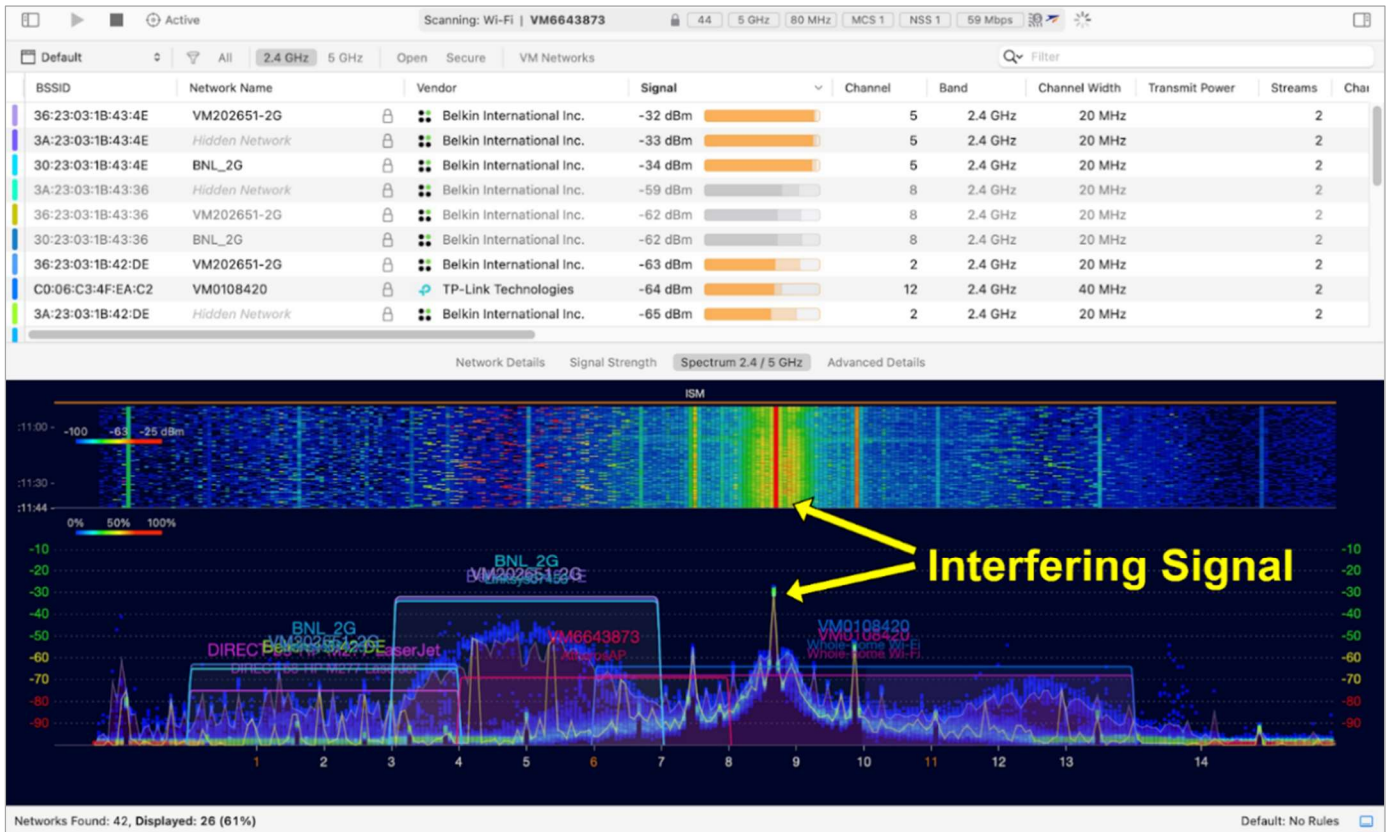


Figure 6-1 - 2.4 GHz Spectrum plot with interferer near channel 9



Figure 6-2 - MetaGeek Wi-Spy DBx & Wi-Spy 2.4x (v2) spectrum analysis dongles



Figure 6-3 - MetaGeek DBx3 spectrum analysis controls

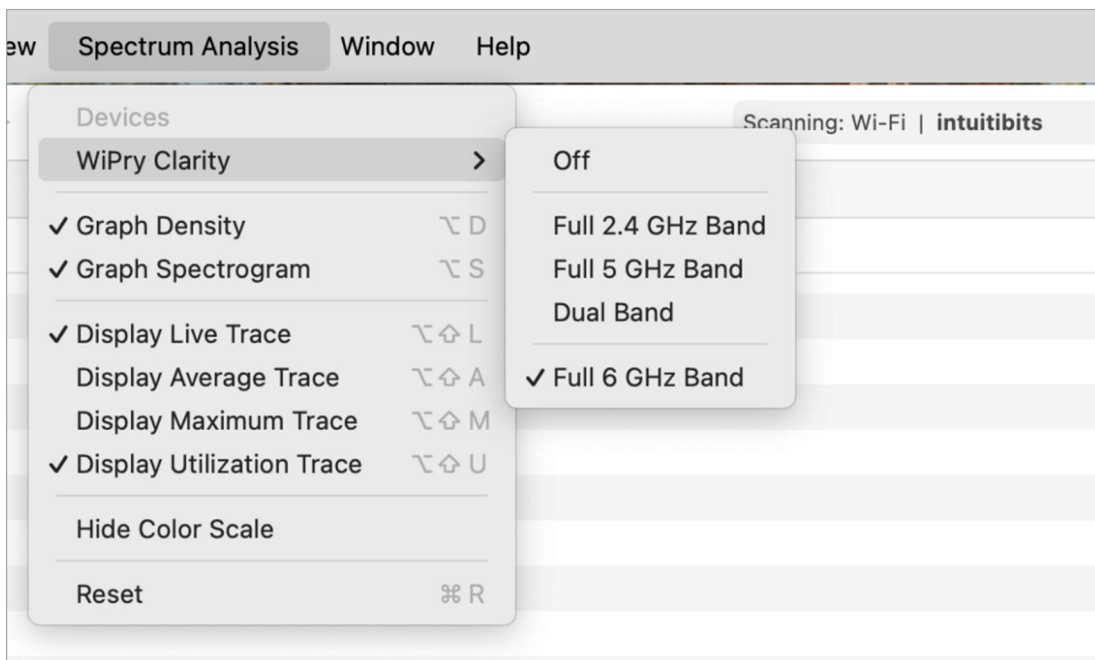


Figure 6-4 - Oscium Clarity spectrum analysis controls





Figure 6-5 - Oscium WiPry 2500x & WiPry Clarity



Figure 6-6 - RF Explorer Wi-Fi Combo



Figure 6-7 - Ubertooth One

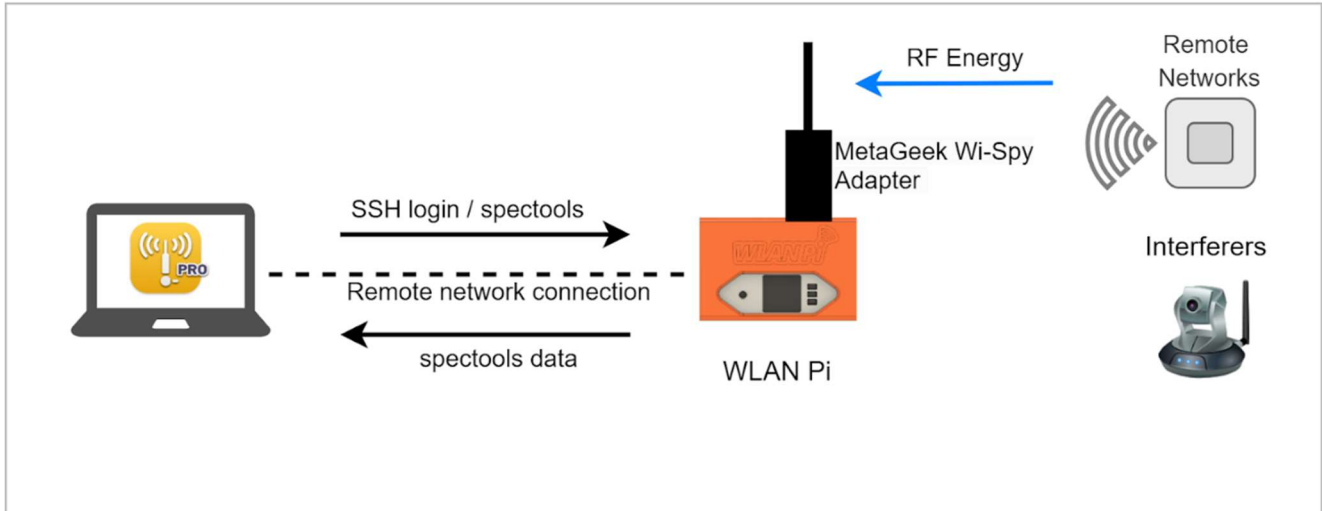


Figure 6-8 - WLAN Pi as a remote Spectrum Analysis probe

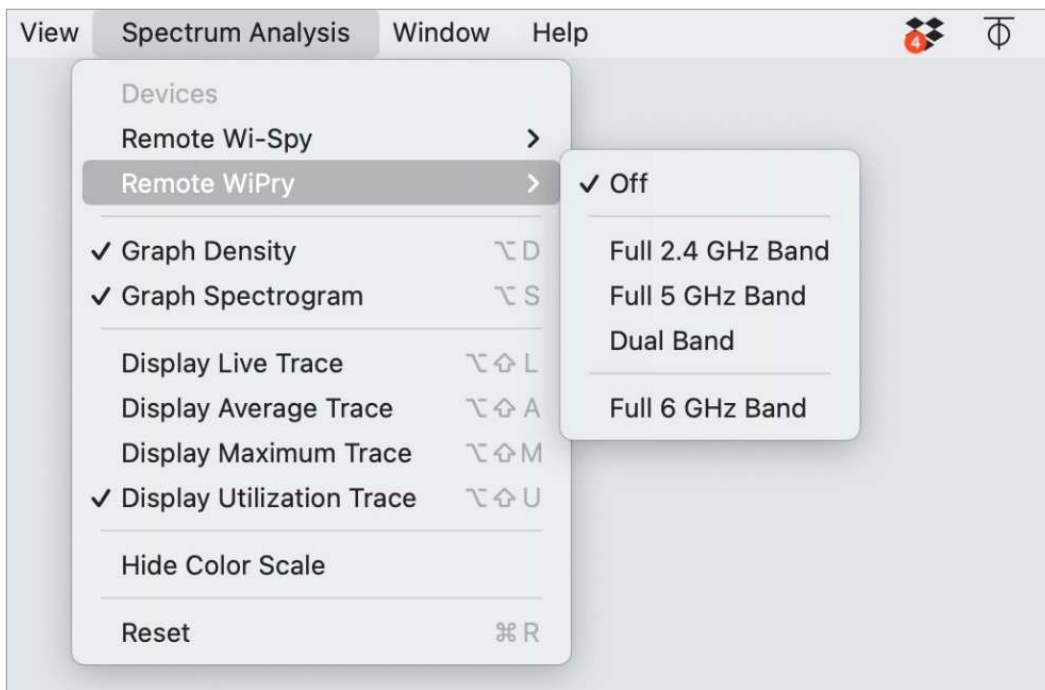


Figure 6-9 - Remote sensor Spectrum Analysis controls

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

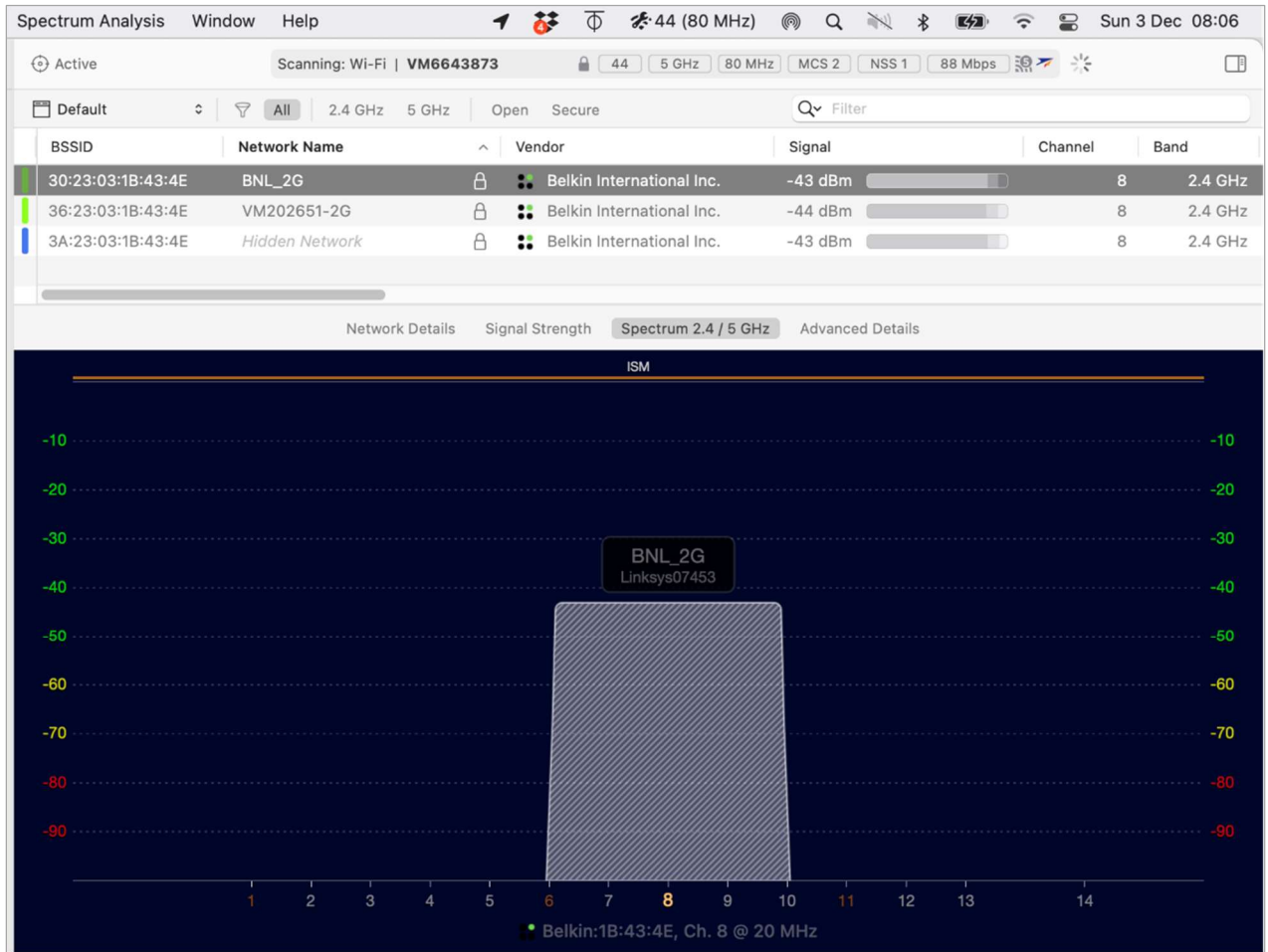


Figure 6-10 - Sample WLAN

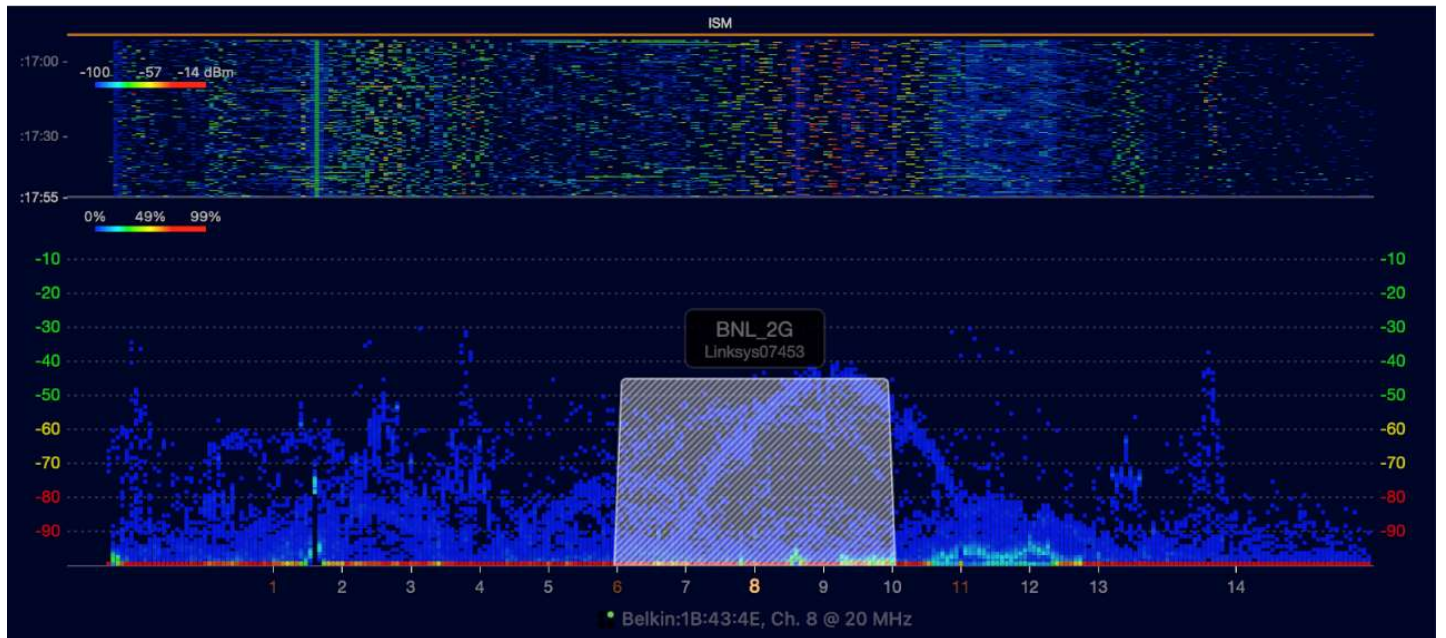


Figure 6-11 - Sample WLAN with Graph Density & Graph Spectrogram views enabled

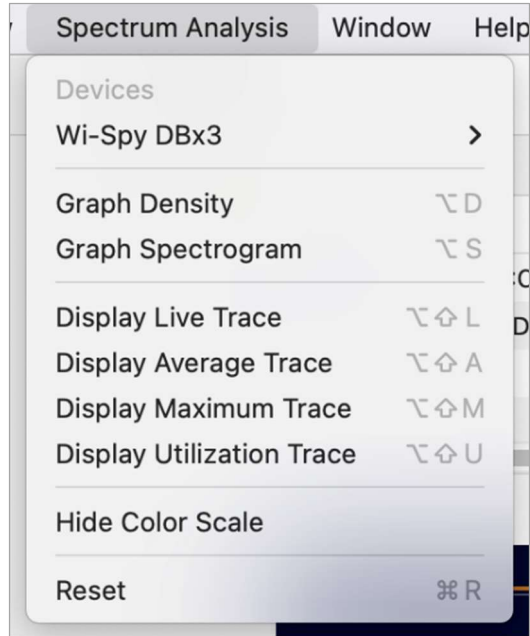


Figure 6-12 - WFE Pro 3 Spectrum Analysis options

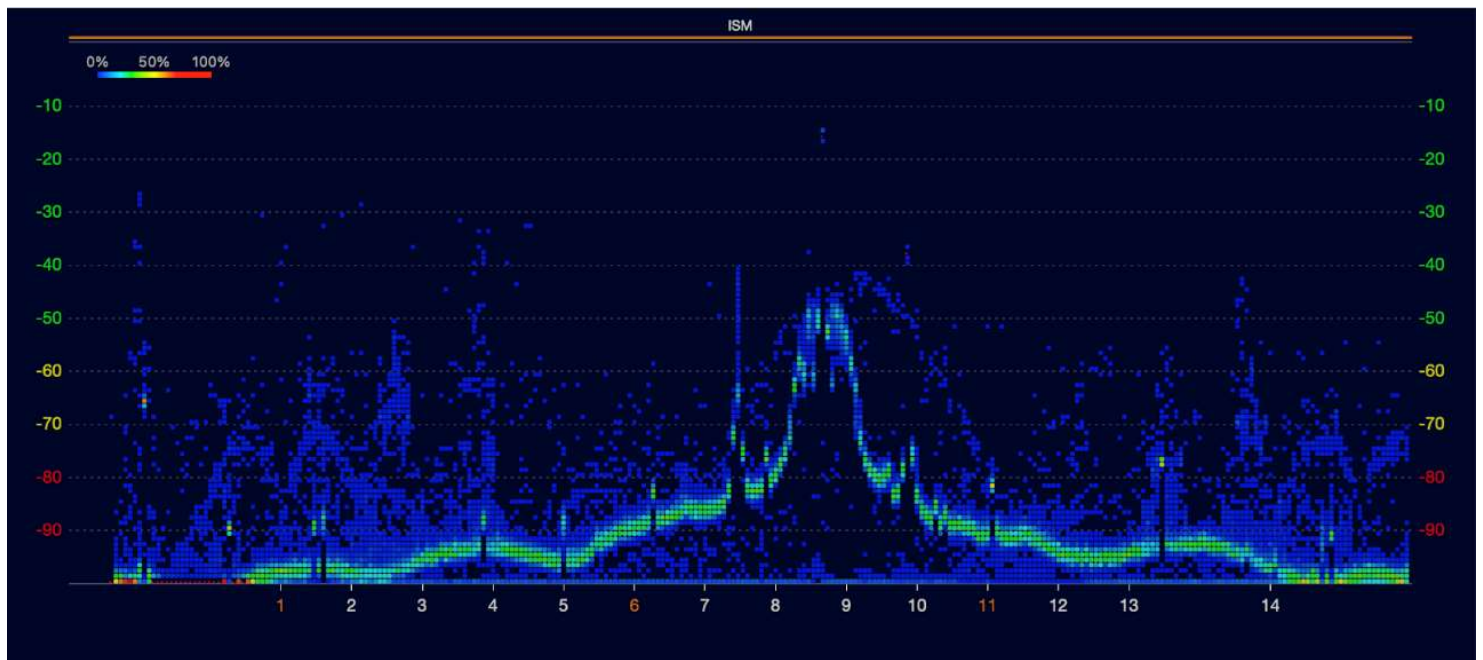


Figure 6-13 - Graph Density view detail with an interferer



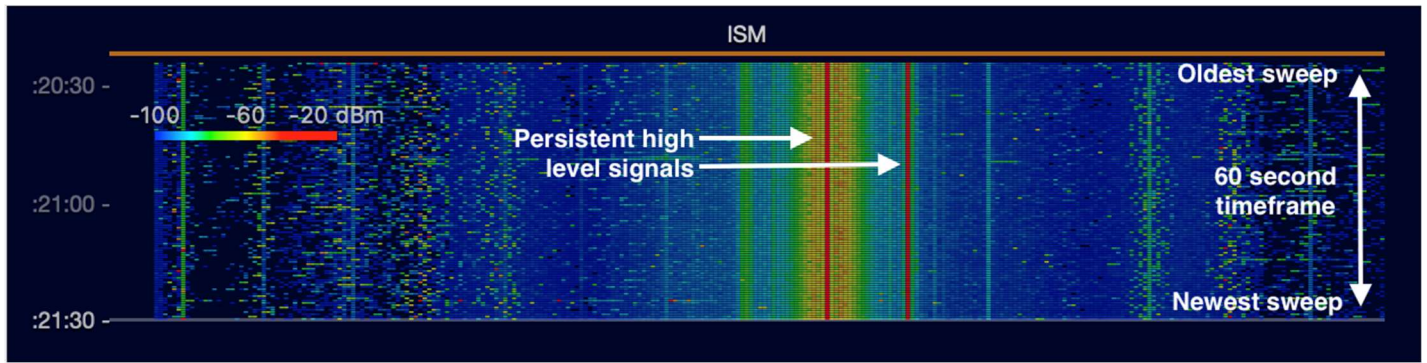


Figure 6-14 - Spectrogram view detail with an interferer

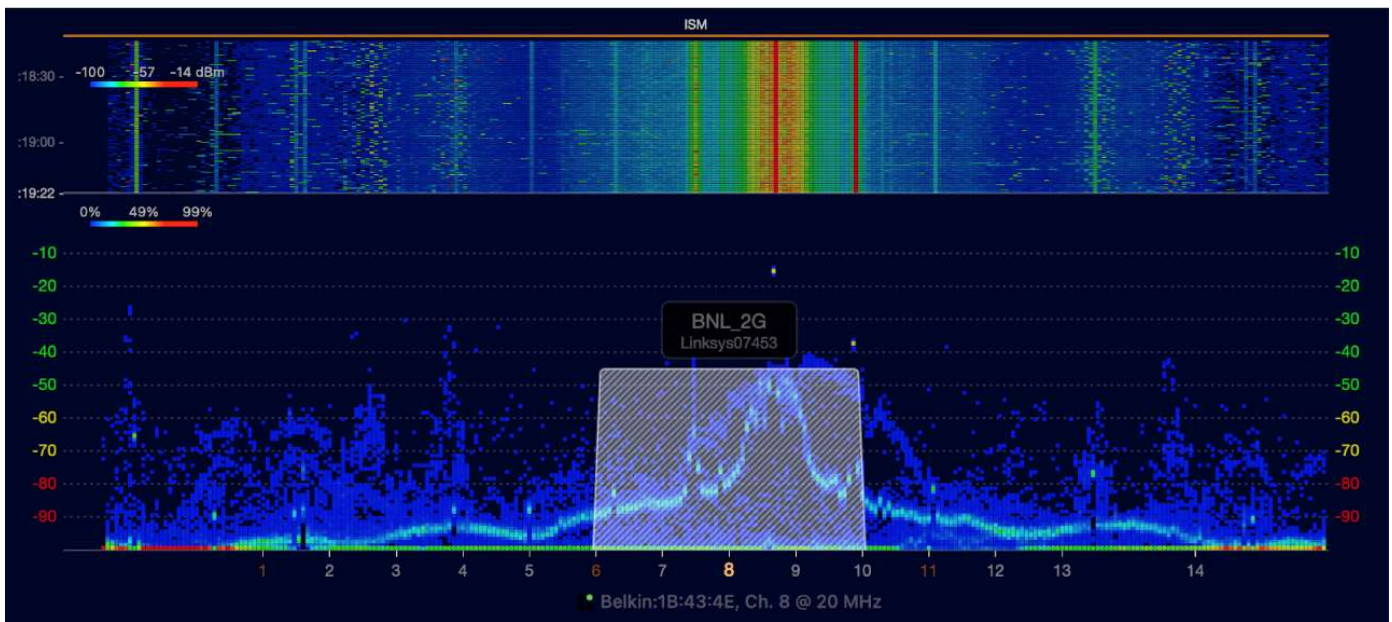


Figure 6-15 - Spectrogram (top) and density view (bottom) with an interferer

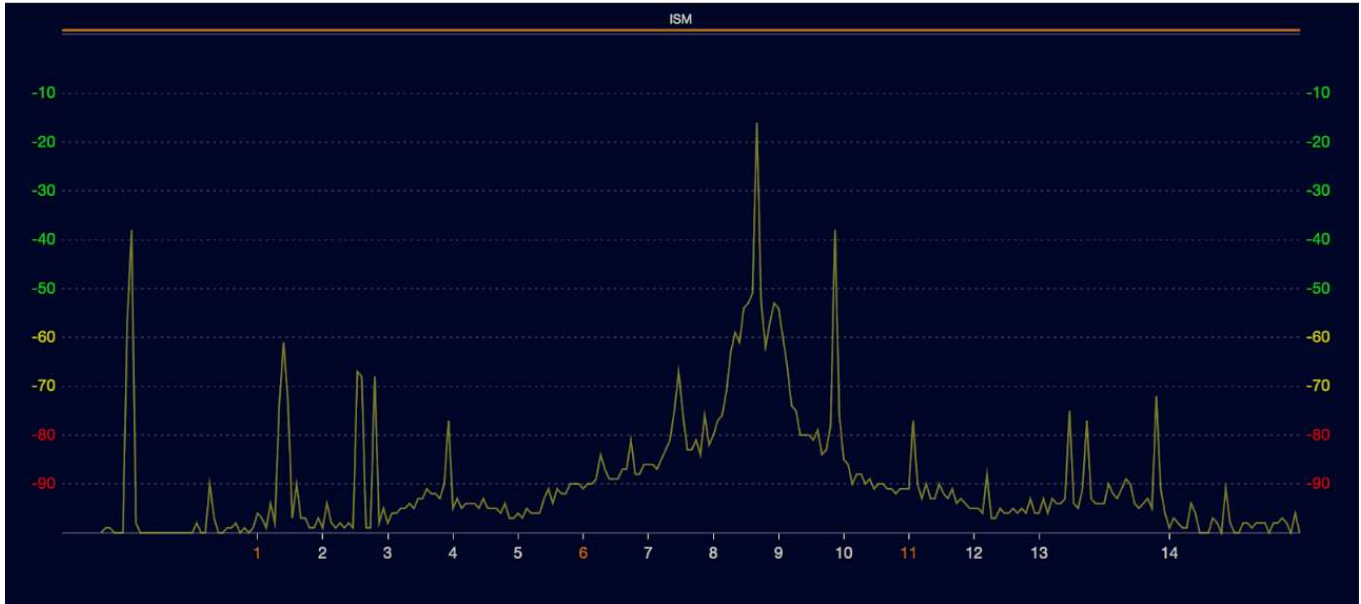


Figure 6-16 - Live trace

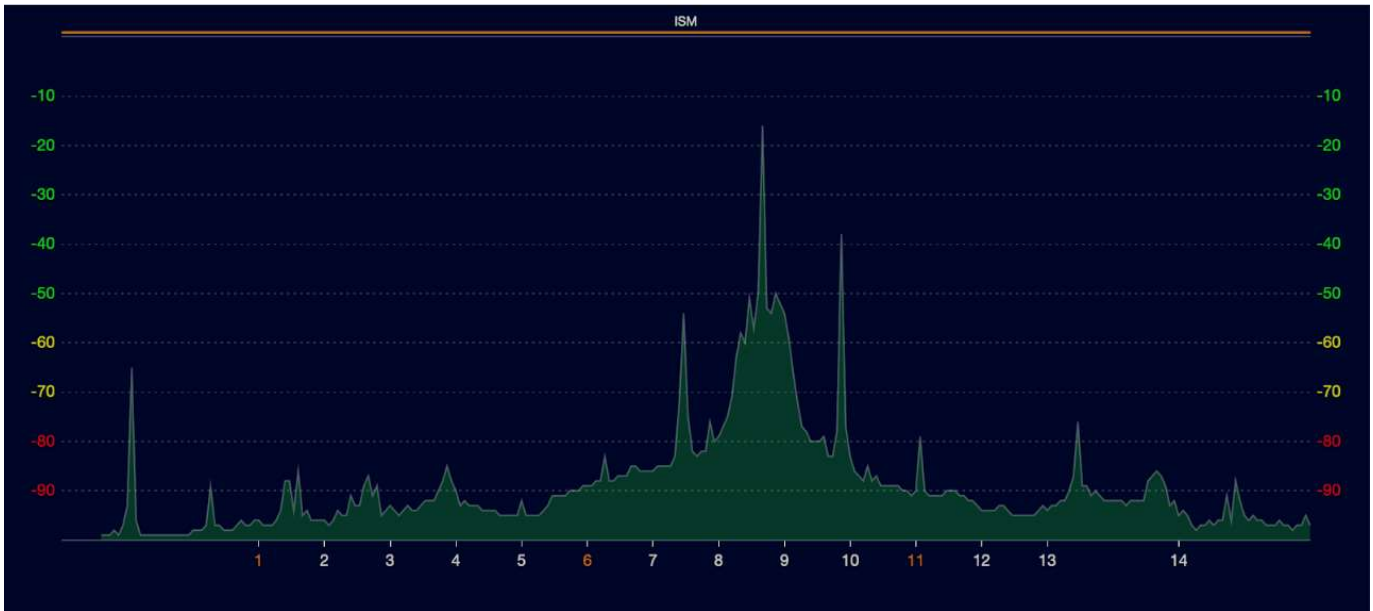


Figure 6-17 - Average trace

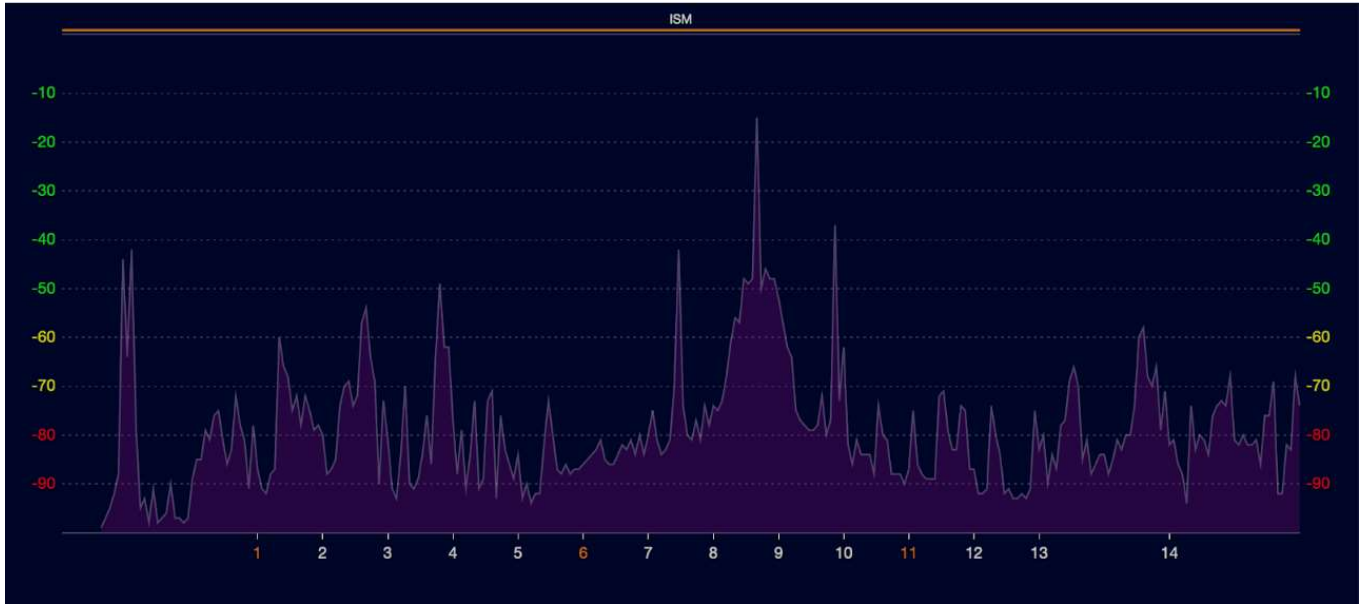


Figure 6-18 - Maximum trace

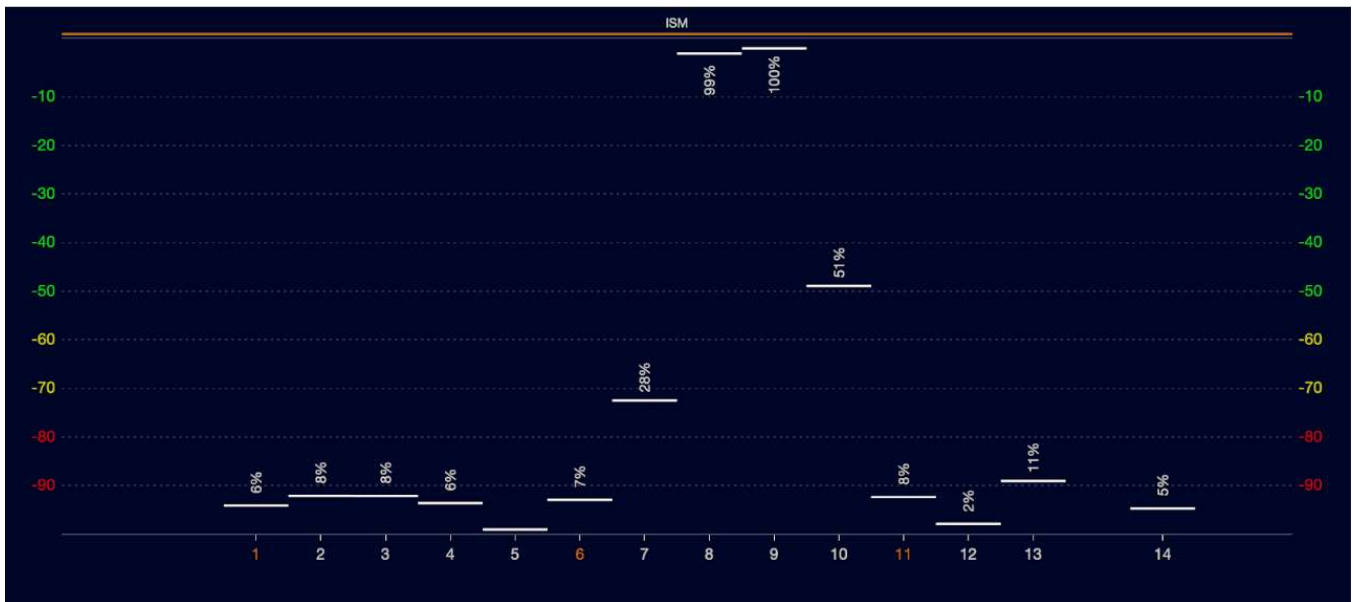


Figure 6-19 - Utilization trace



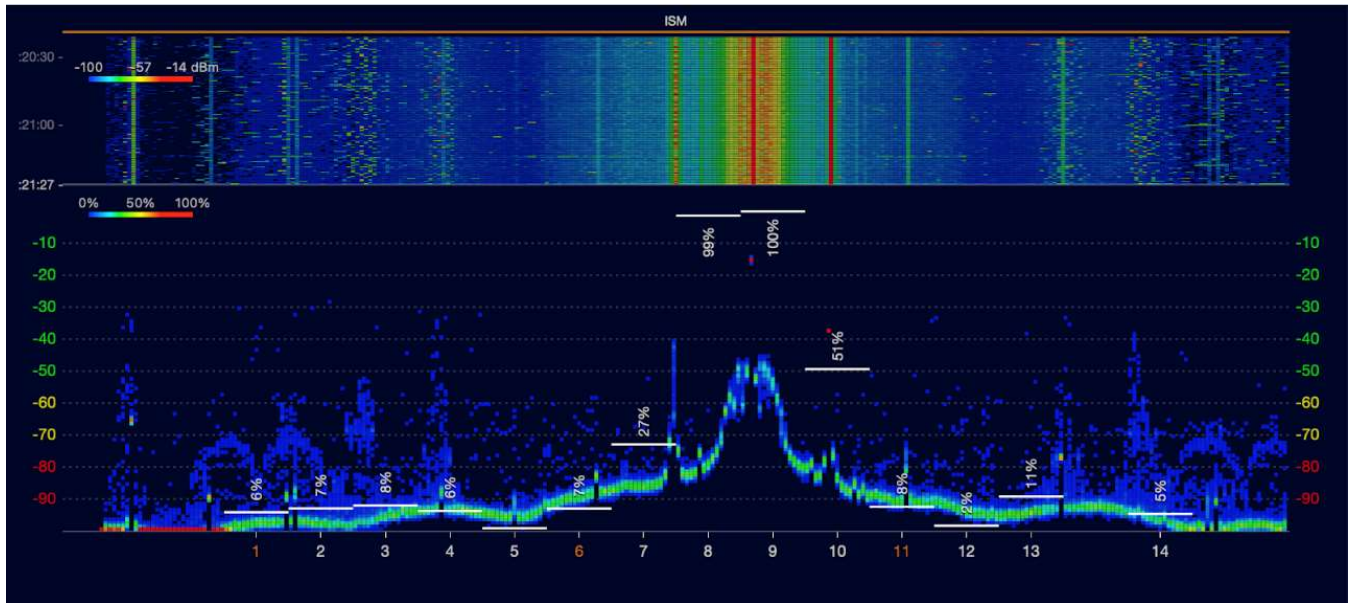


Figure 6-20 - Combined traces showing a wireless camera interferer

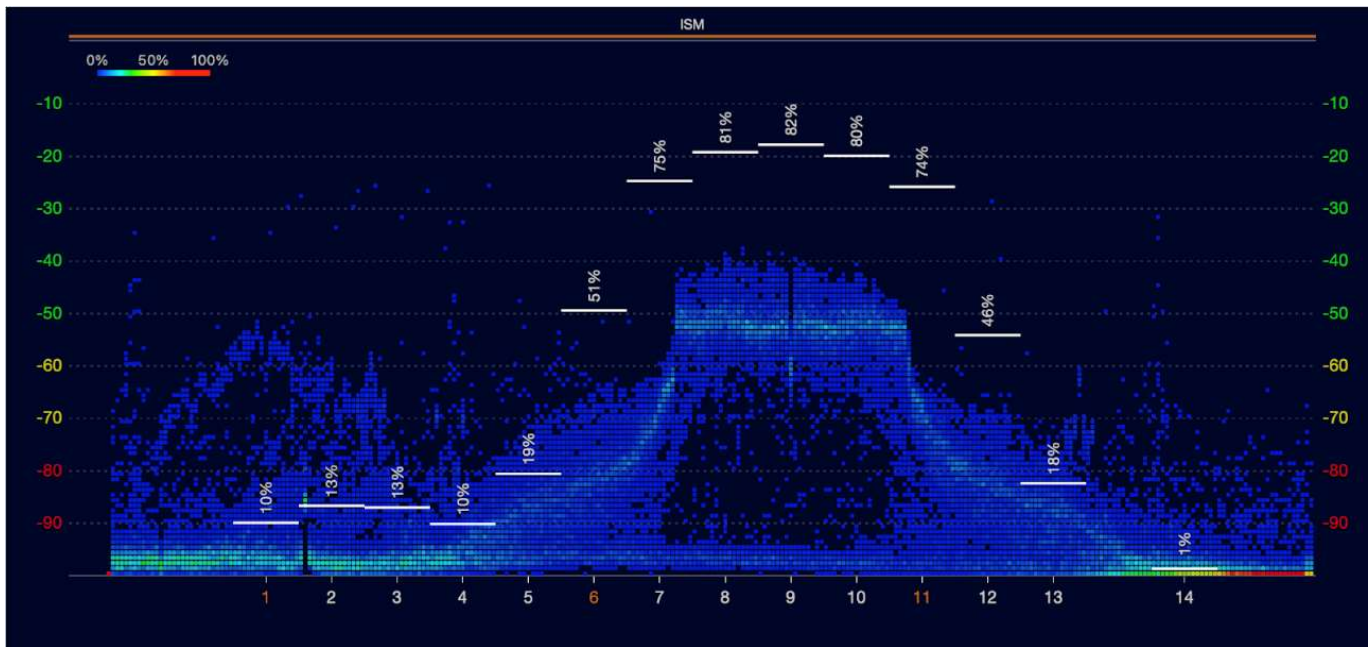


Figure 6-21 - 2.4 GHz WLAN density graph & utilization trace

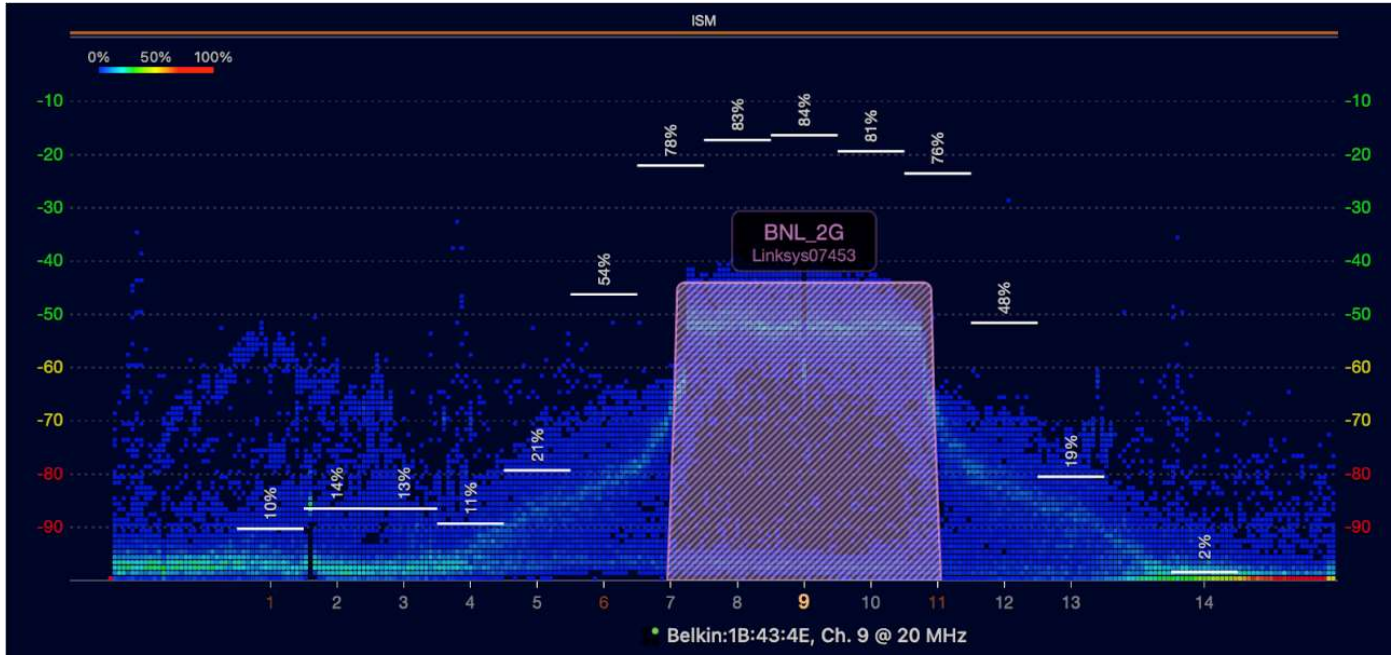


Figure 6-22 - 2.4 GHz WLAN density graph & utilization trace with network overlay



# Chapter 7 - Bluetooth & Zigbee Data

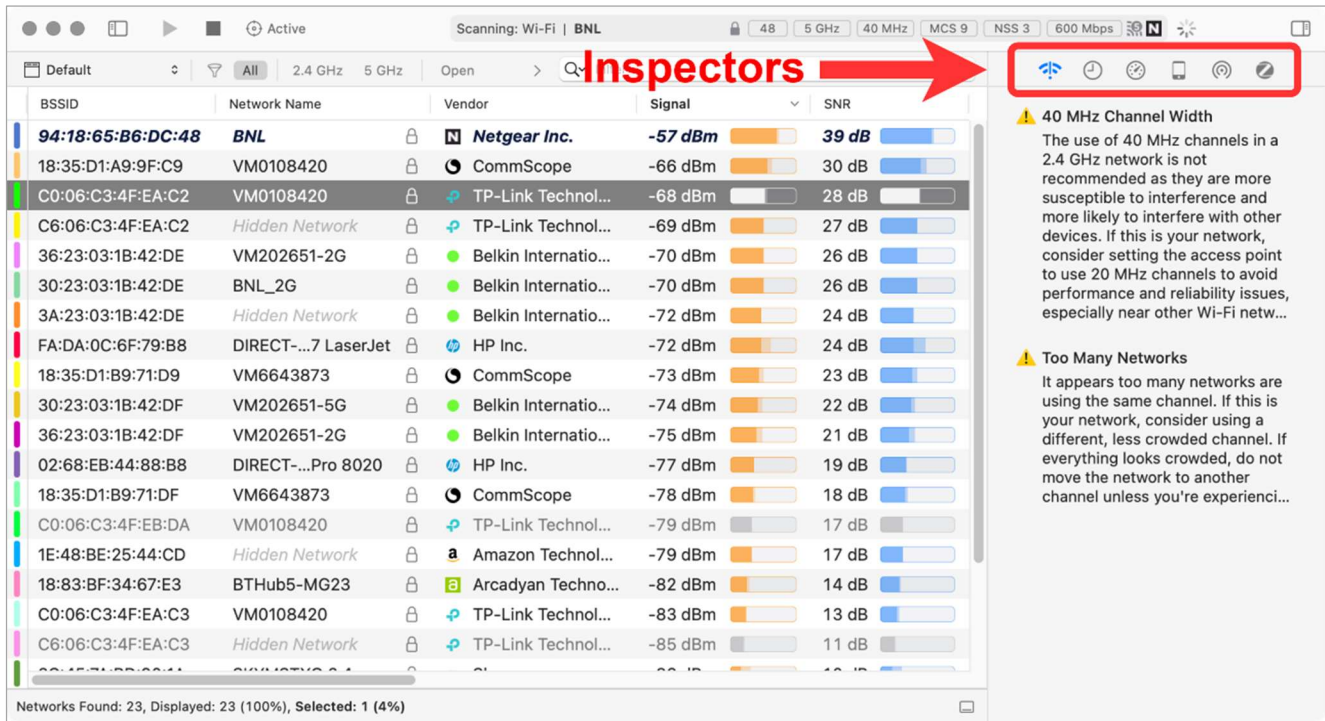


Figure 7-1 - WFE Pro 3 Inspectors panel

Proximity UUID	Protocol	Signal	Measured Power	Major	Minor
50765...613A492	iBeacon	-68 dBm	-50 dBm	2499	61507
2F2344...9FFA6	iBeacon	-64 dBm	-66 dBm	1	1
2F2344...9FFA6	AltBeacon	-64 dBm	-66 dBm	1	1
1CA92E...A4BF6	iBeacon	-72 dBm	3 dBm	5152	0
1CA92E...A4BF6	iBeacon	-62 dBm	3 dBm	5151	0

Figure 7-2 - Proximity beacon inspector

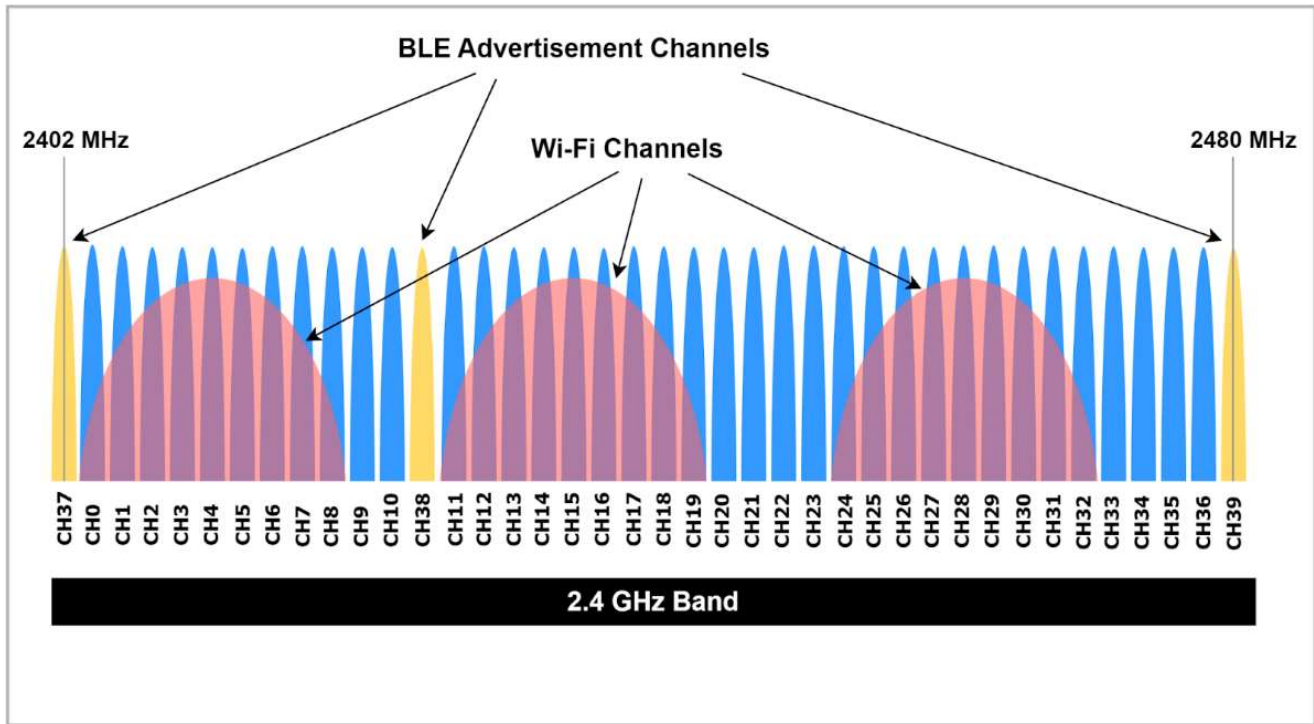


Figure 7-3 - 2.4 GHz band showing BLE channels with Wi-Fi band overlaid

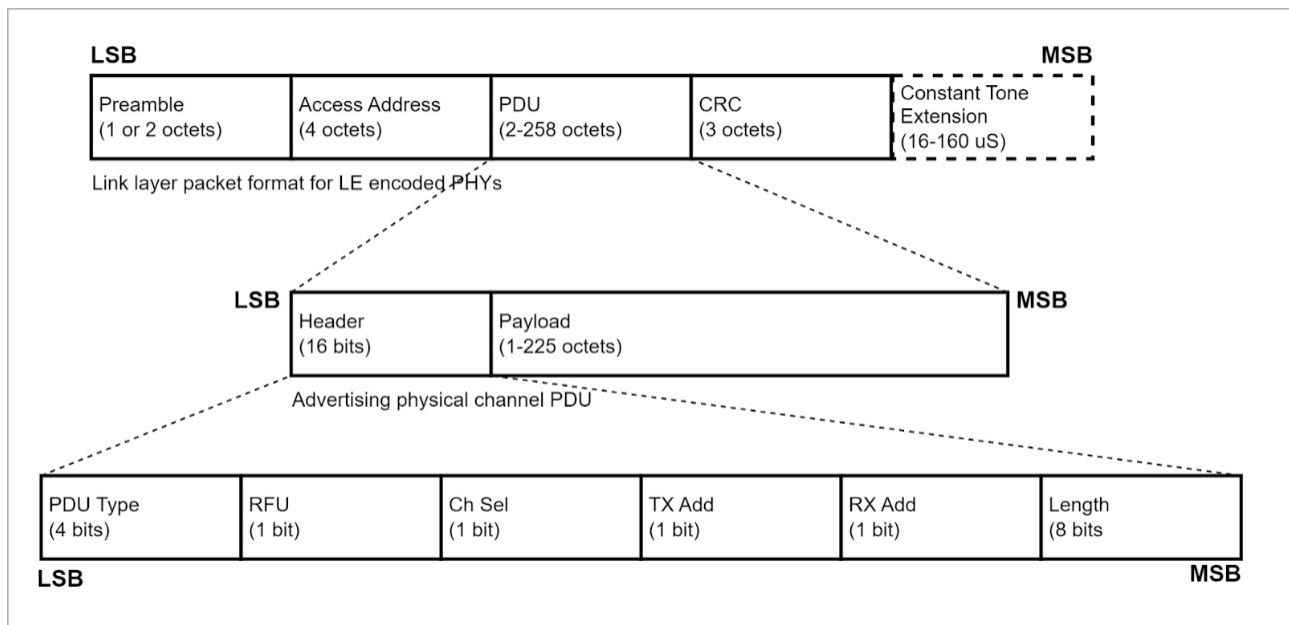


Figure 7-4 - BLE PDU details



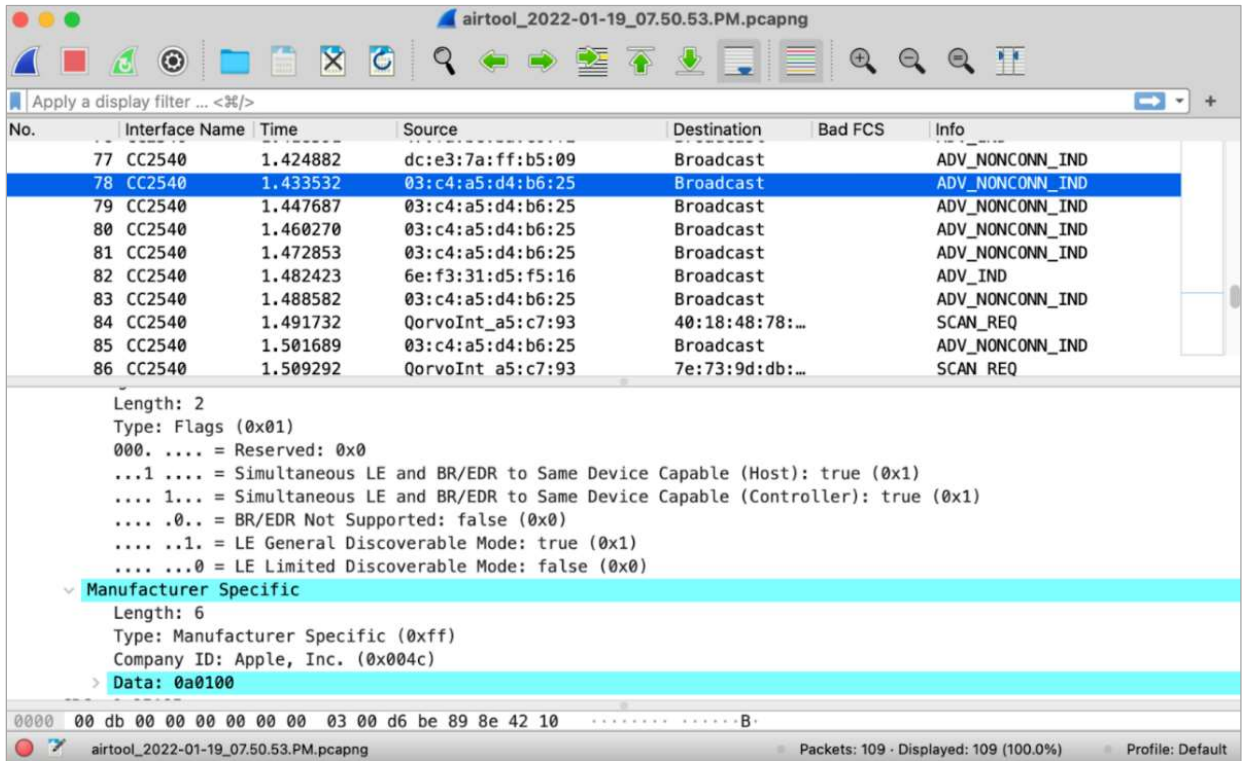


Figure 7-5 - A capture showing BLE advertisements

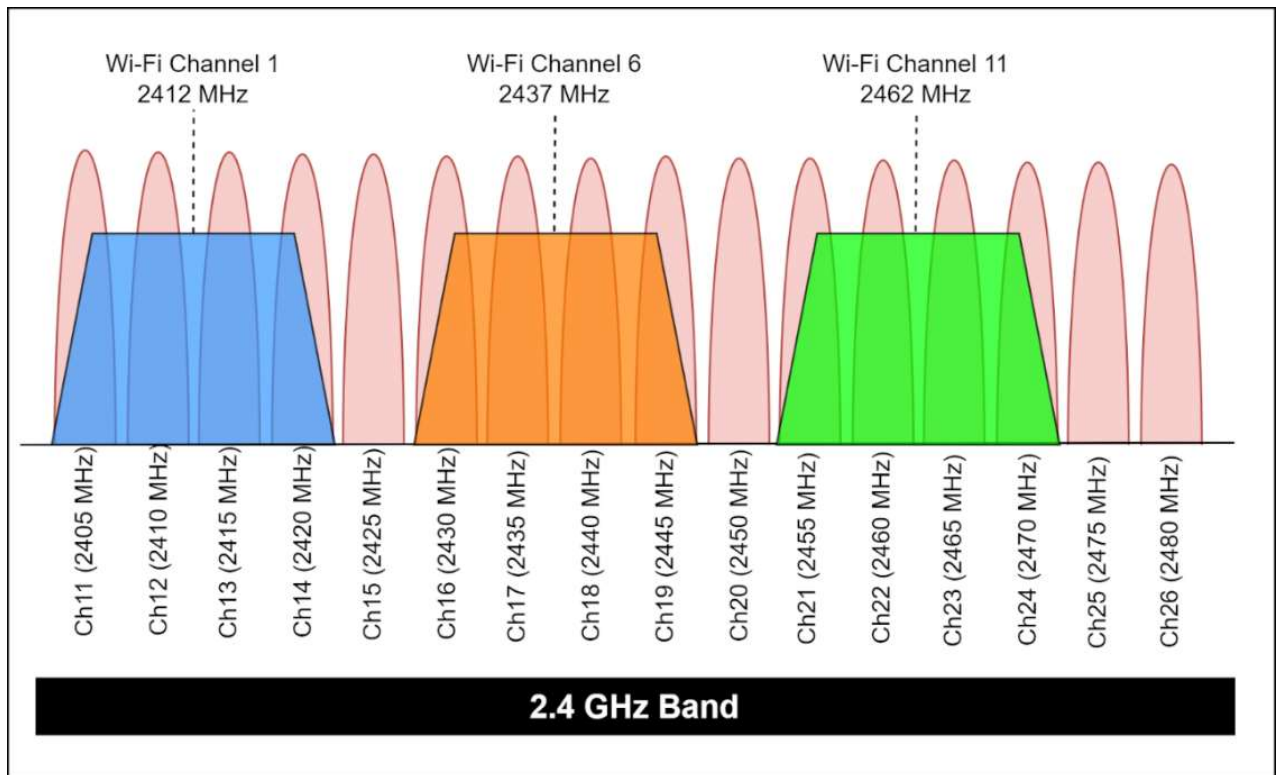


Figure 7-6 - Zigbee channel plan

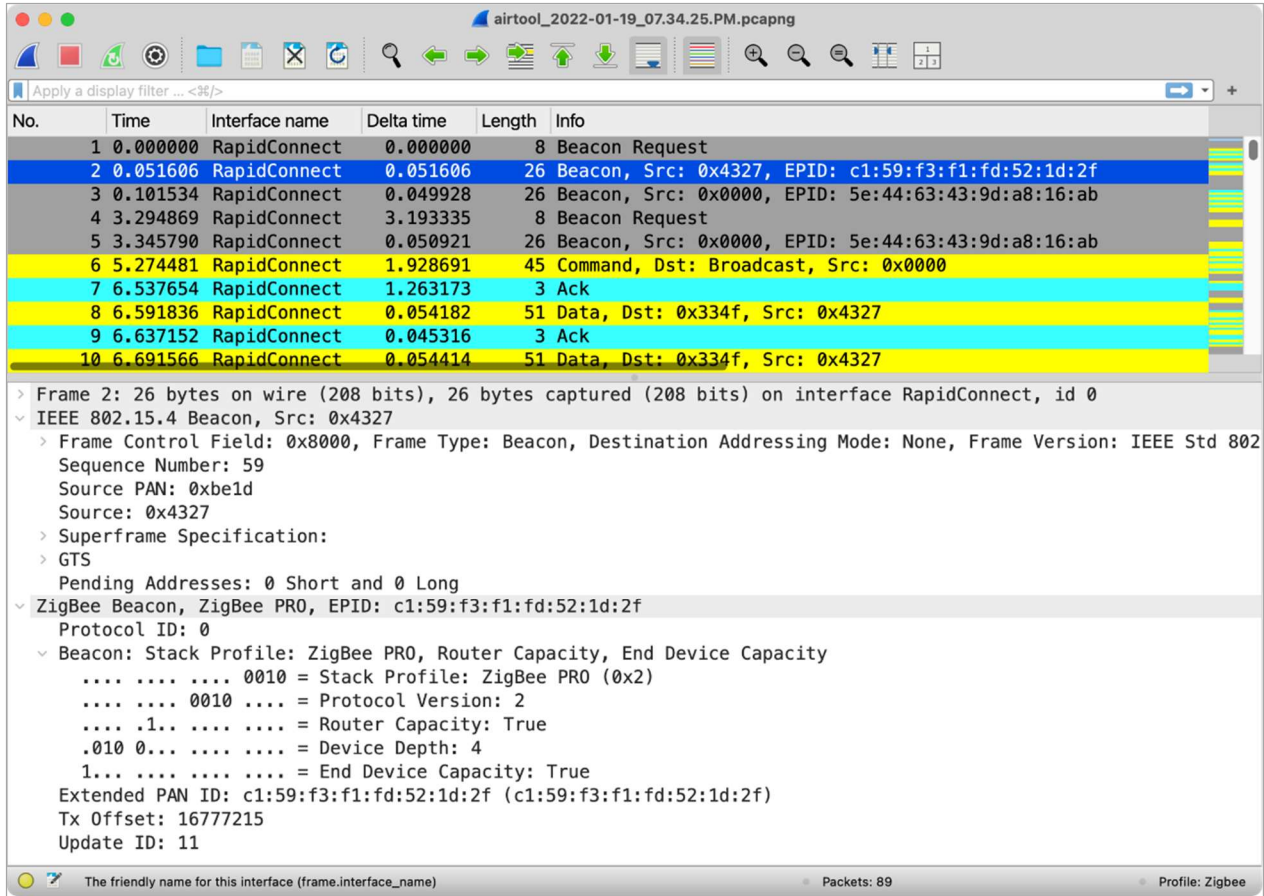


Figure 7-7 - A capture showing Zigbee beacons

PAN ID	Channel	Signal	Link Quality	Frequency
BE1D	25	-39 dBm	58%	2475 MHz
B373	25	-40 dBm	100%	2475 MHz

Figure 7-8 - Zigbee network discovery





Figure 7-9 - Zigbee network overlaid on Wi-Fi networks

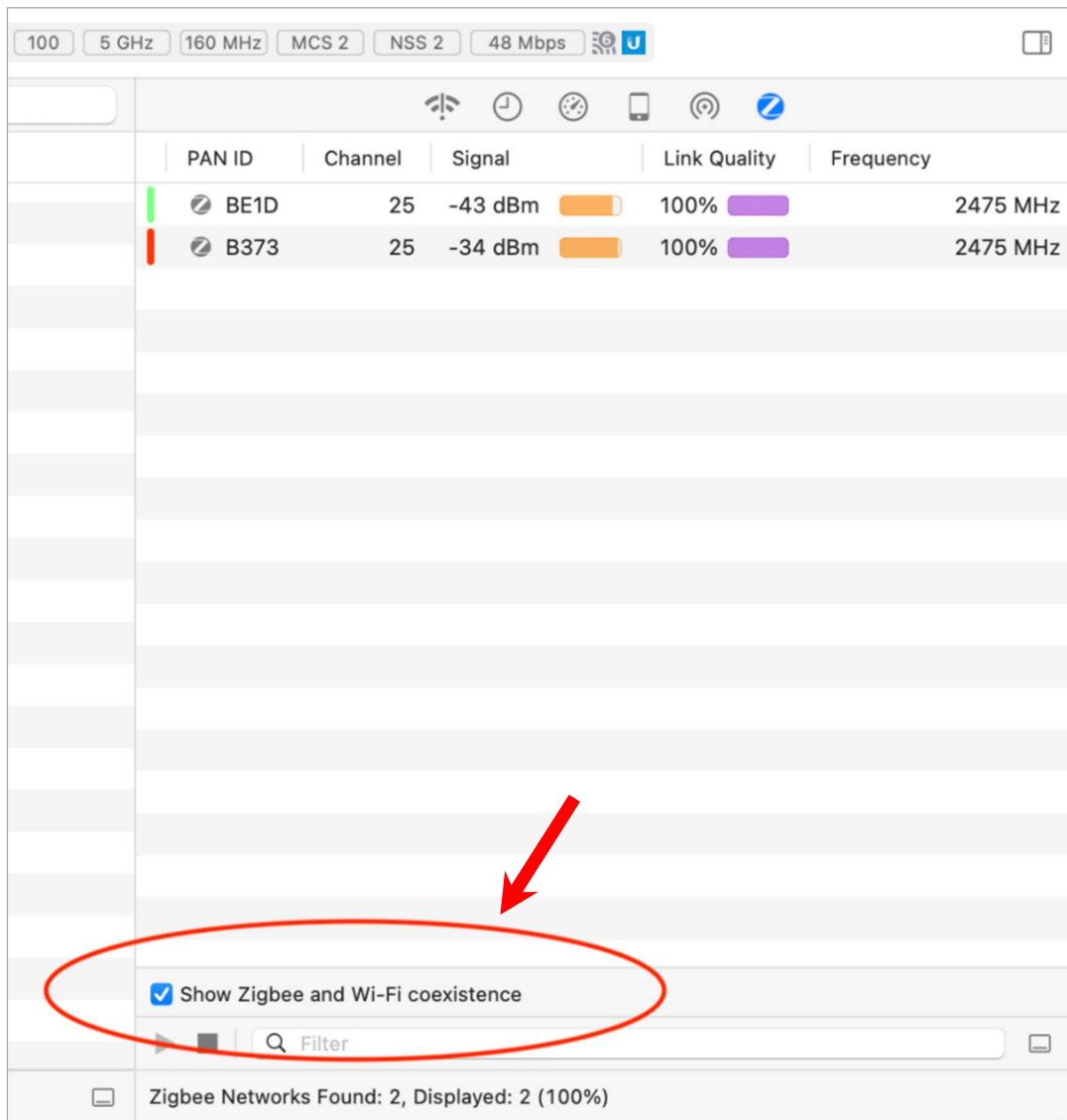


Figure 7-10 - Control to enable/disable Zigbee overlay on Wi-Fi networks



**Figure 7-11 - The RapidConnect Zigbee Smart Energy USE Stick**

# Chapter 8 - WiFi Explorer Pro 3 UI Tour

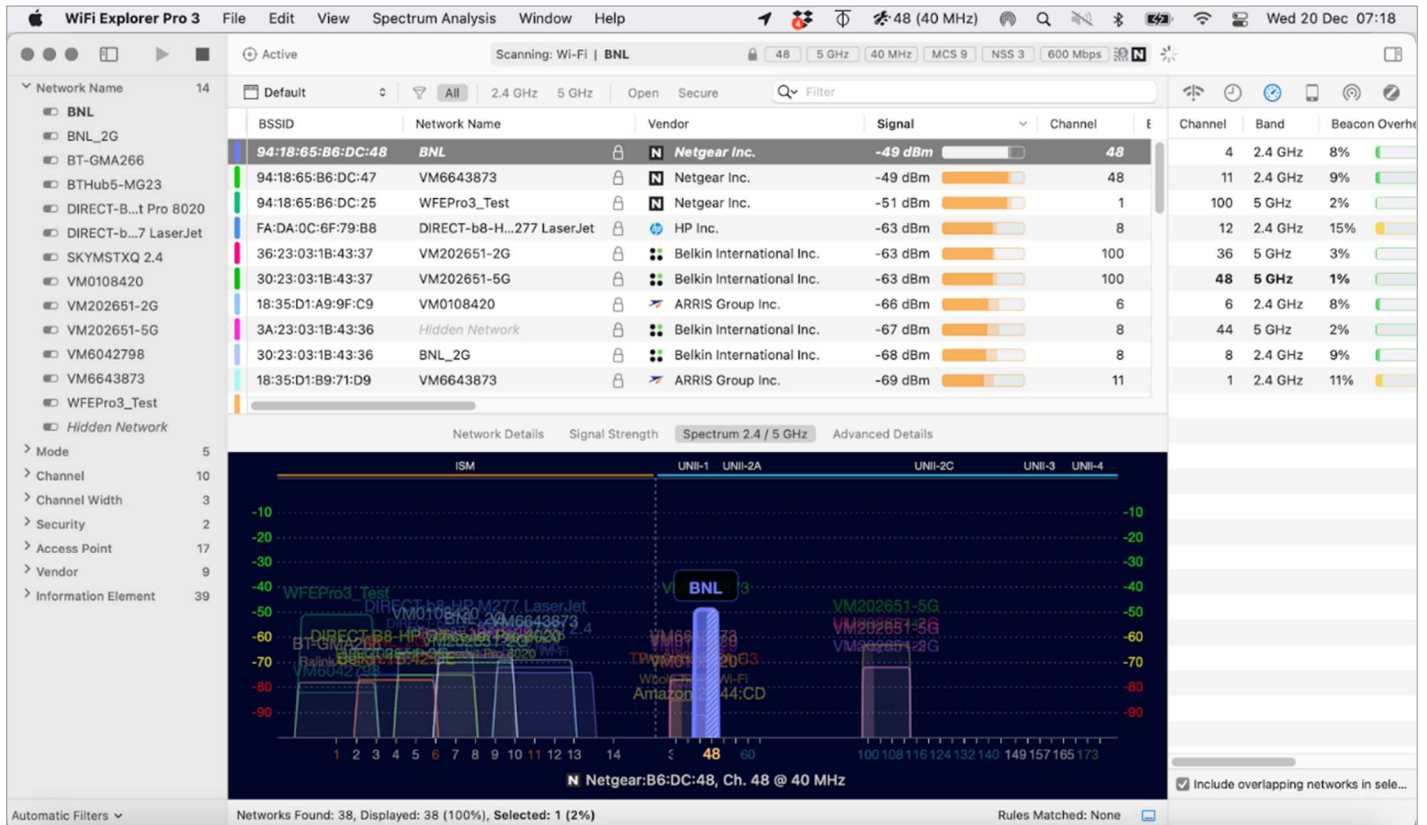


Figure 8-1 - WFE Pro 3's user interface

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)



Figure 8-2 - WFE Pro 3's user interface areas

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

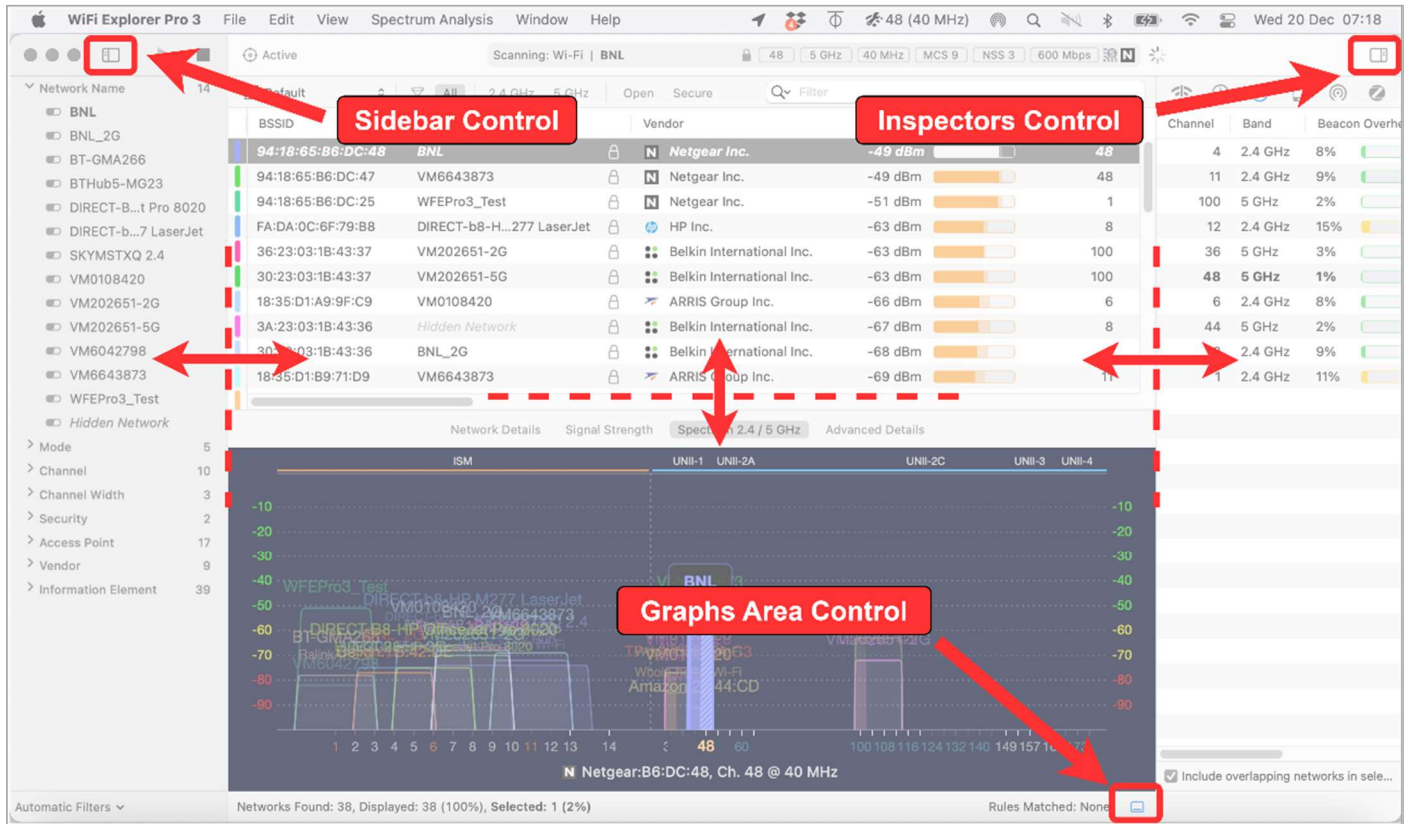


Figure 8-3 - WFE Pro 3's UI area reveal/hide controls



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

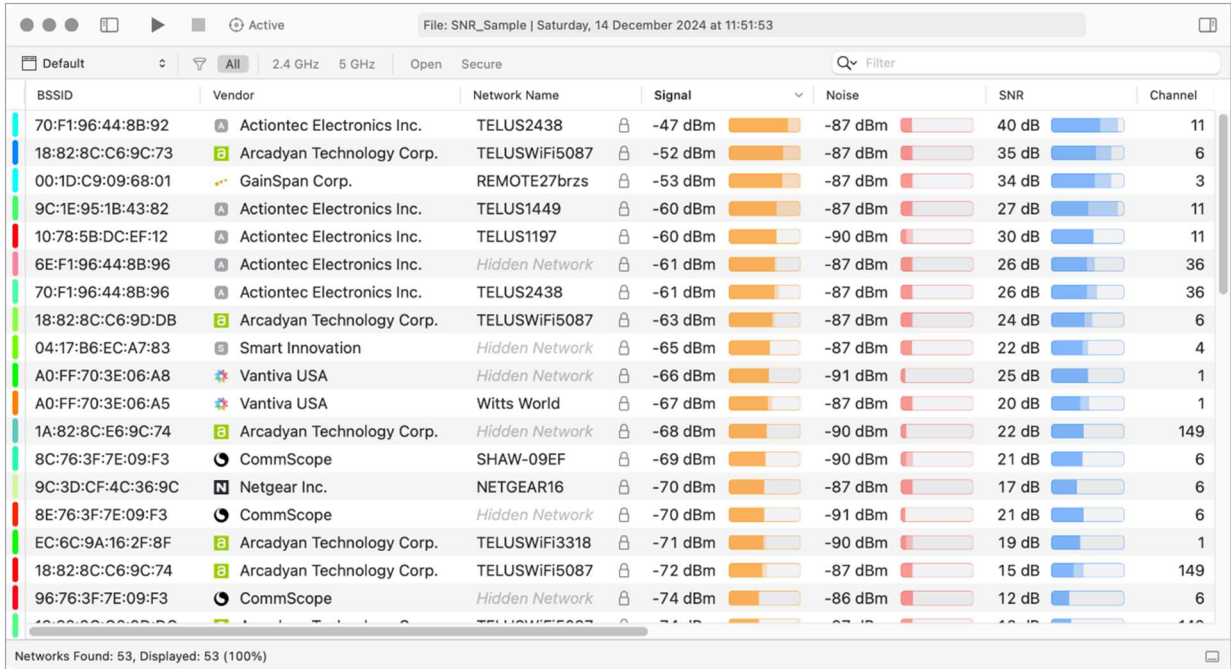


Figure 8-4 - WFE Pro 3's UI with sidebar, inspectors, and graphs areas hidden

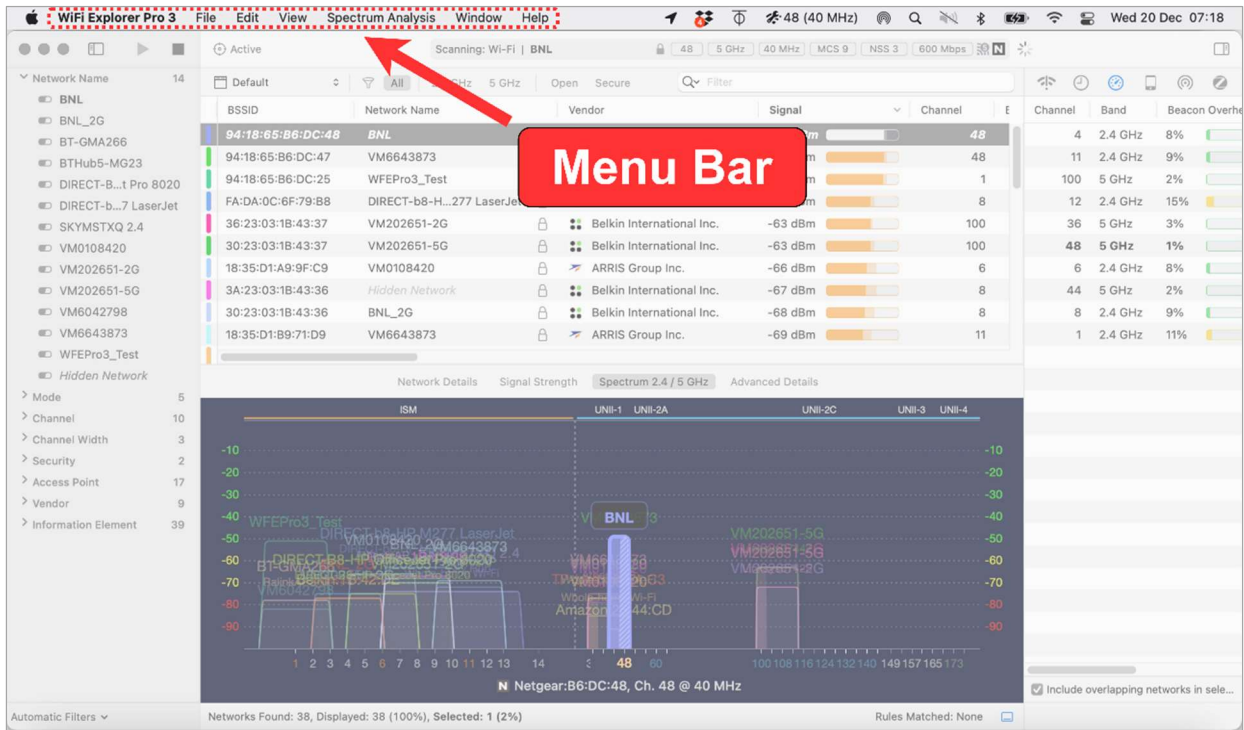


Figure 8-5 - Menu Bar UI location



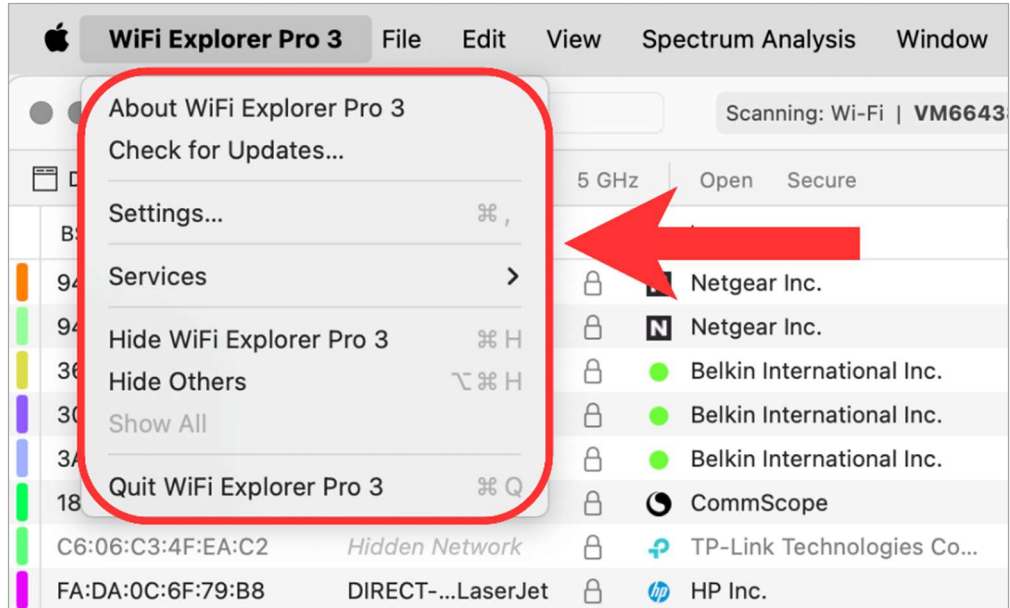


Figure 8-6 – WiFi Explorer Pro 3 menu items

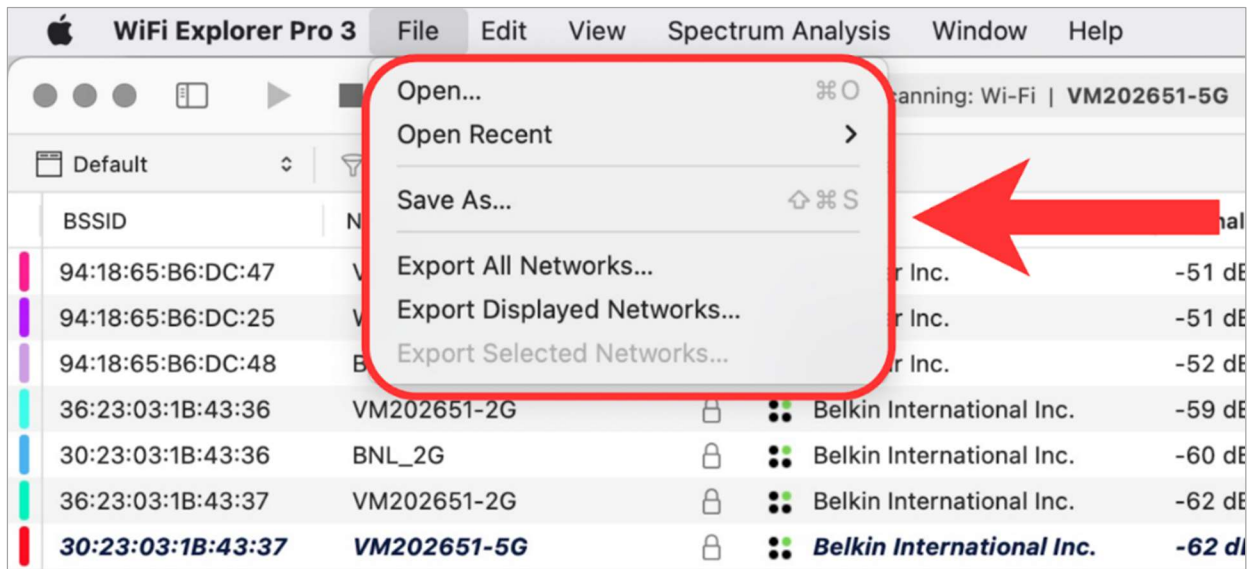


Figure 8-7 - File menu items

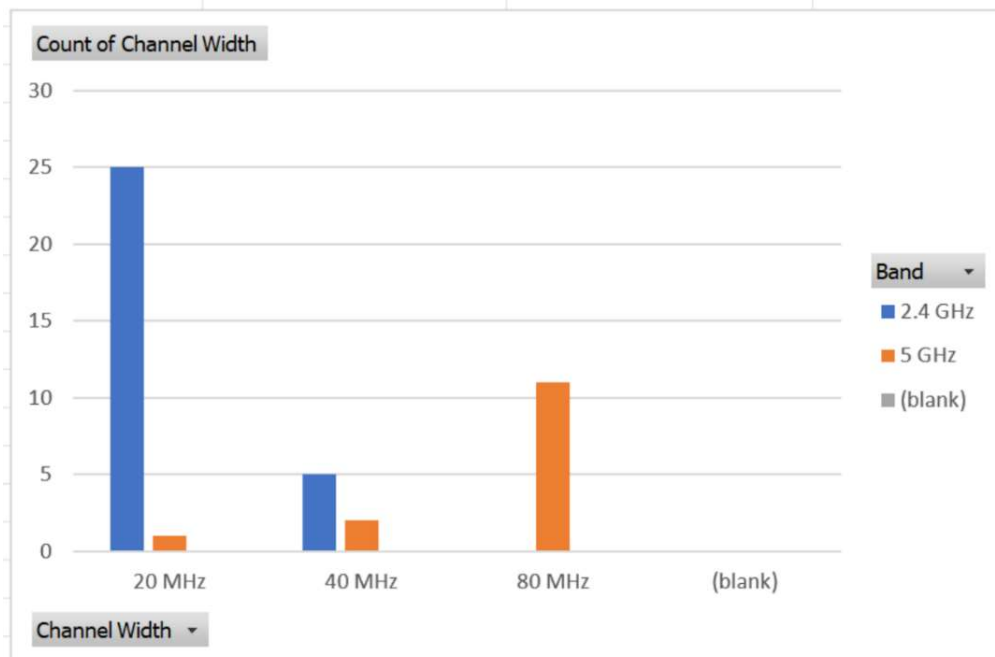


Figure 8-8 - Sample report created from exported CSV data using Excel

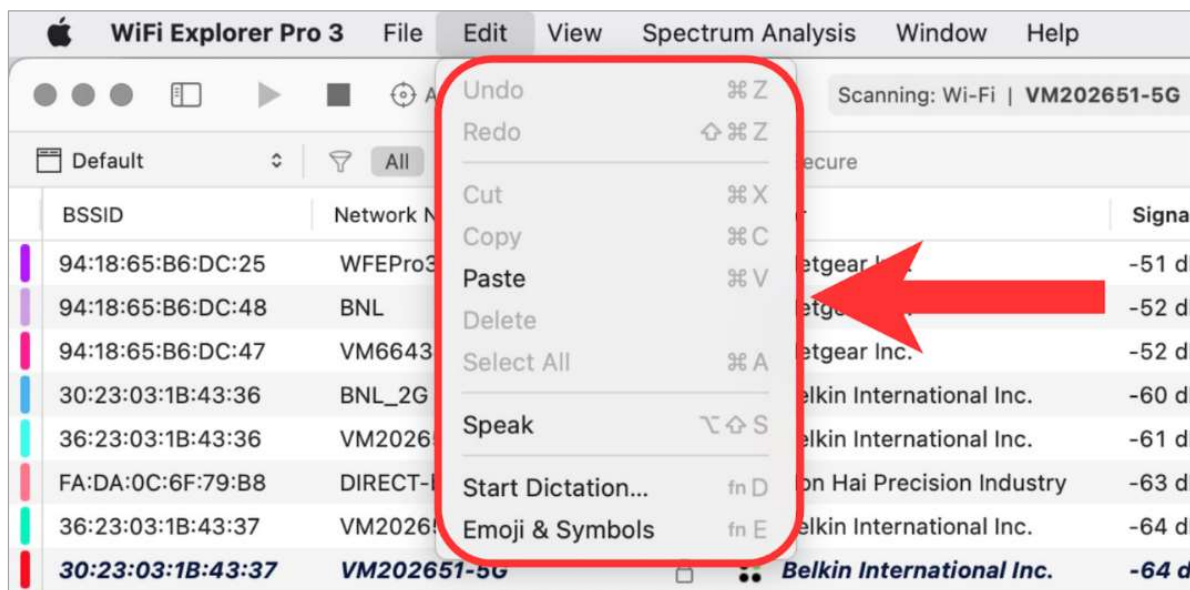


Figure 8-9 - Edit menu items

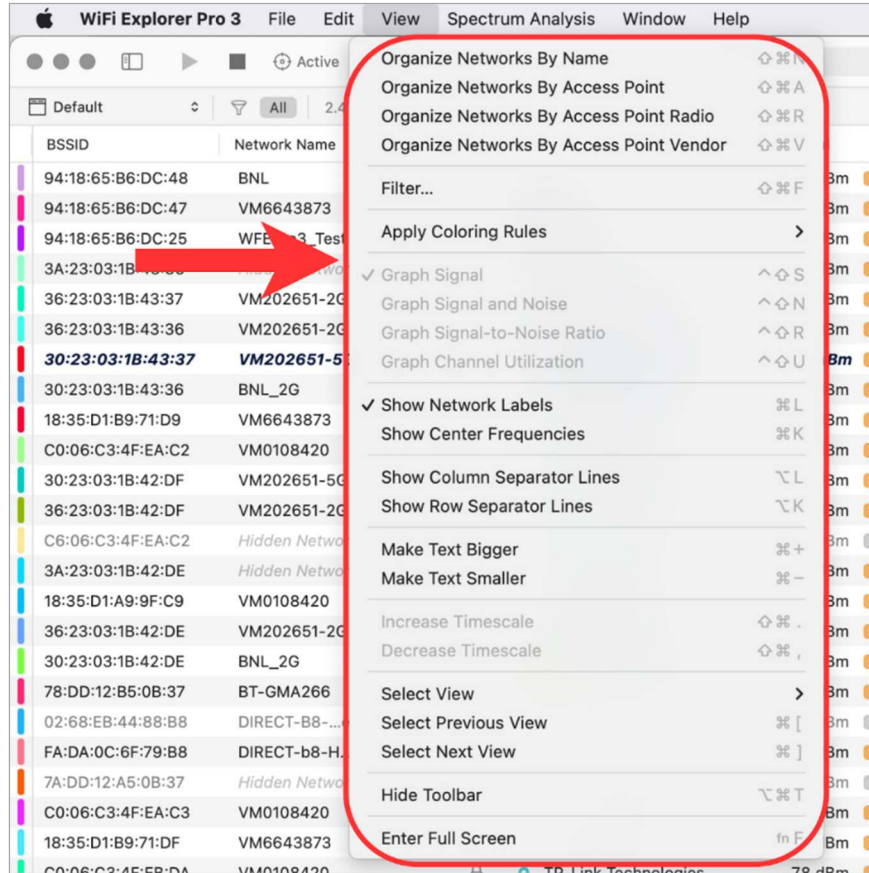


Figure 8-10 - View menu items

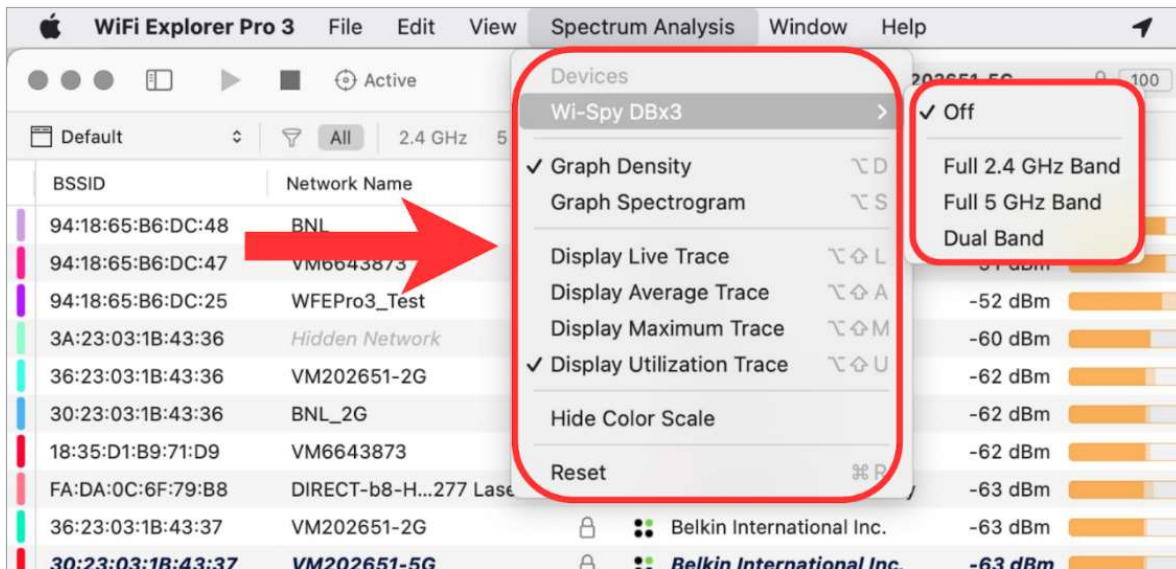


Figure 8-11 – Spectrum Analysis menu items

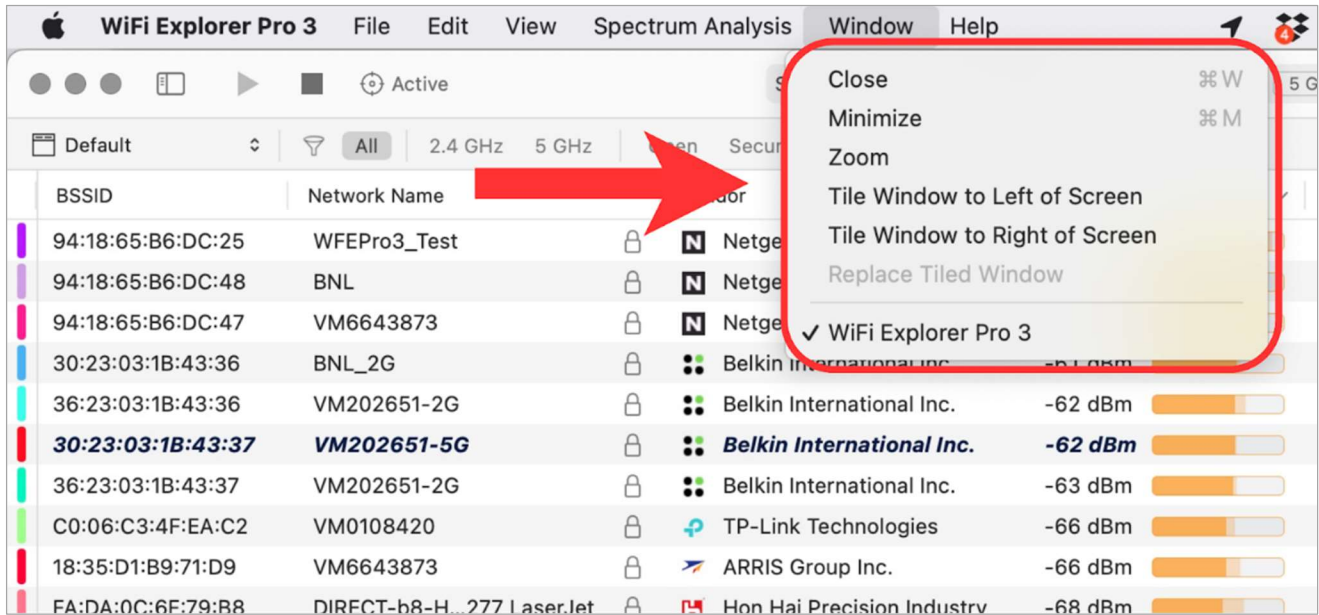


Figure 8-12 - Window menu item

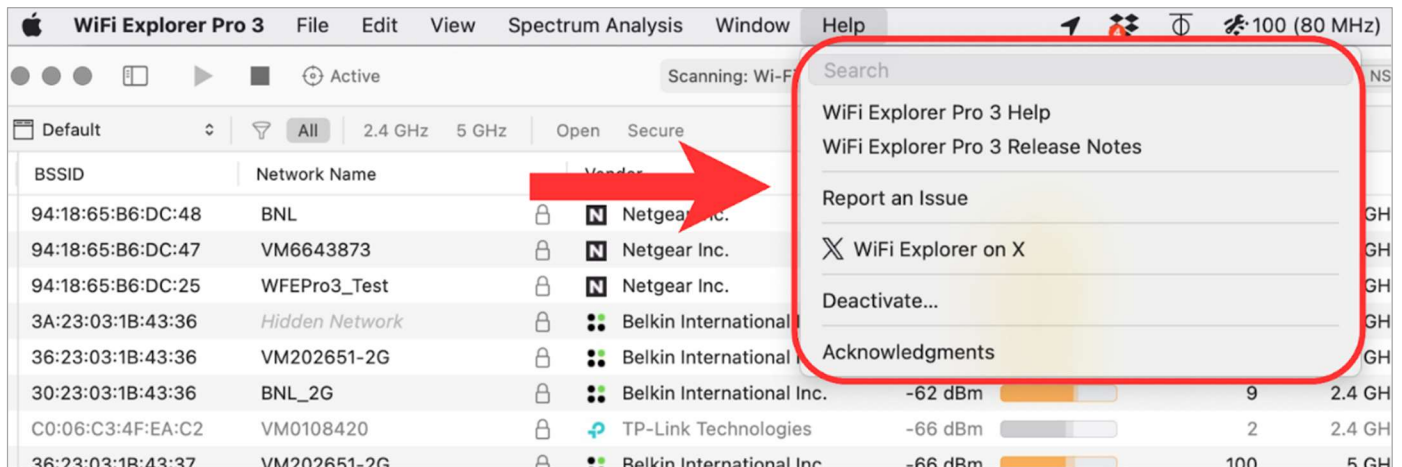


Figure 8-13 - Help menu items



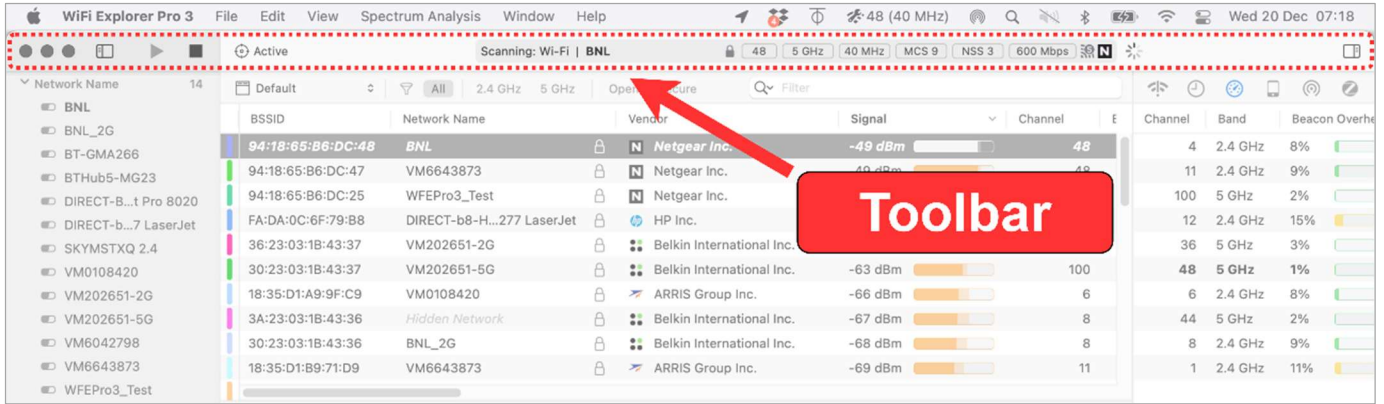


Figure 8-14 - Toolbar UI location

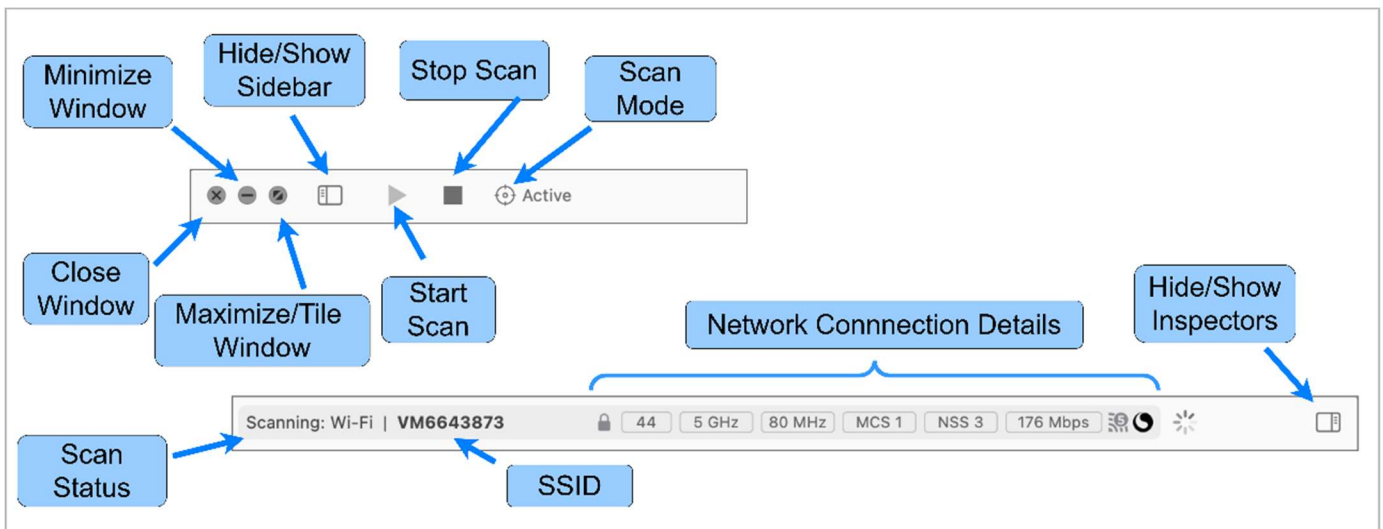


Figure 8-15 - Toolbar details (toolbar split to show details)

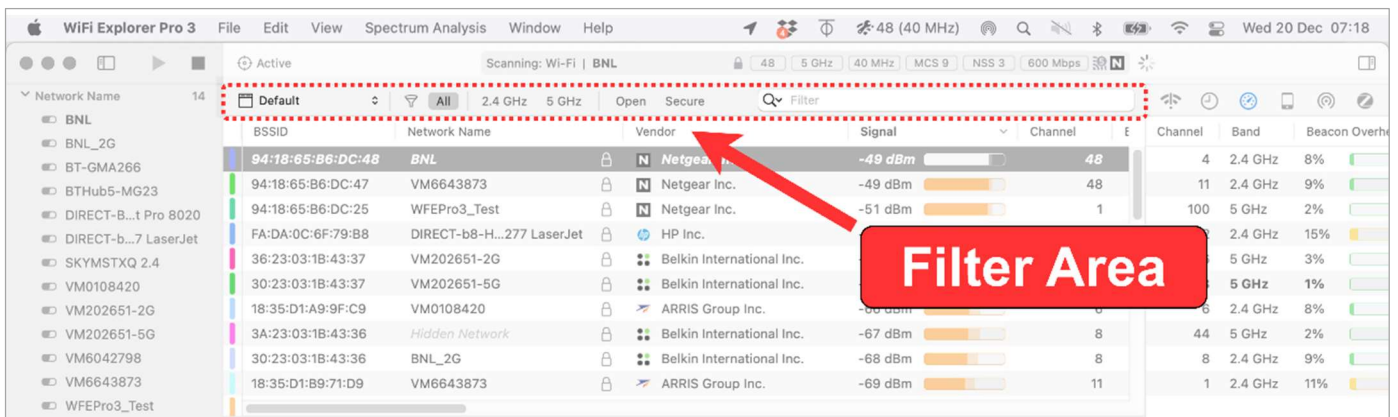


Figure 8-16 - Filter Area UI location

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

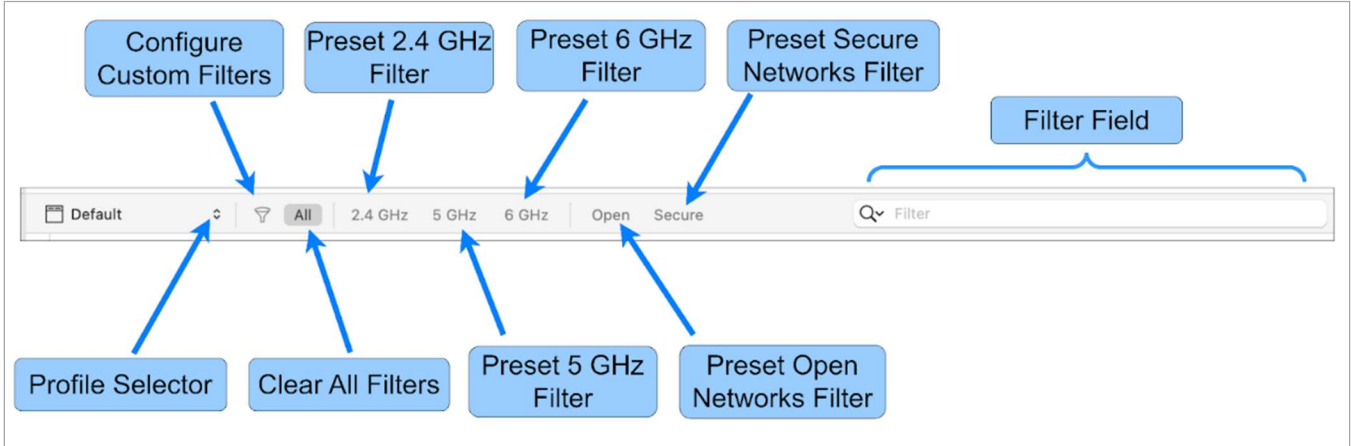


Figure 8-17 - Filter Area details

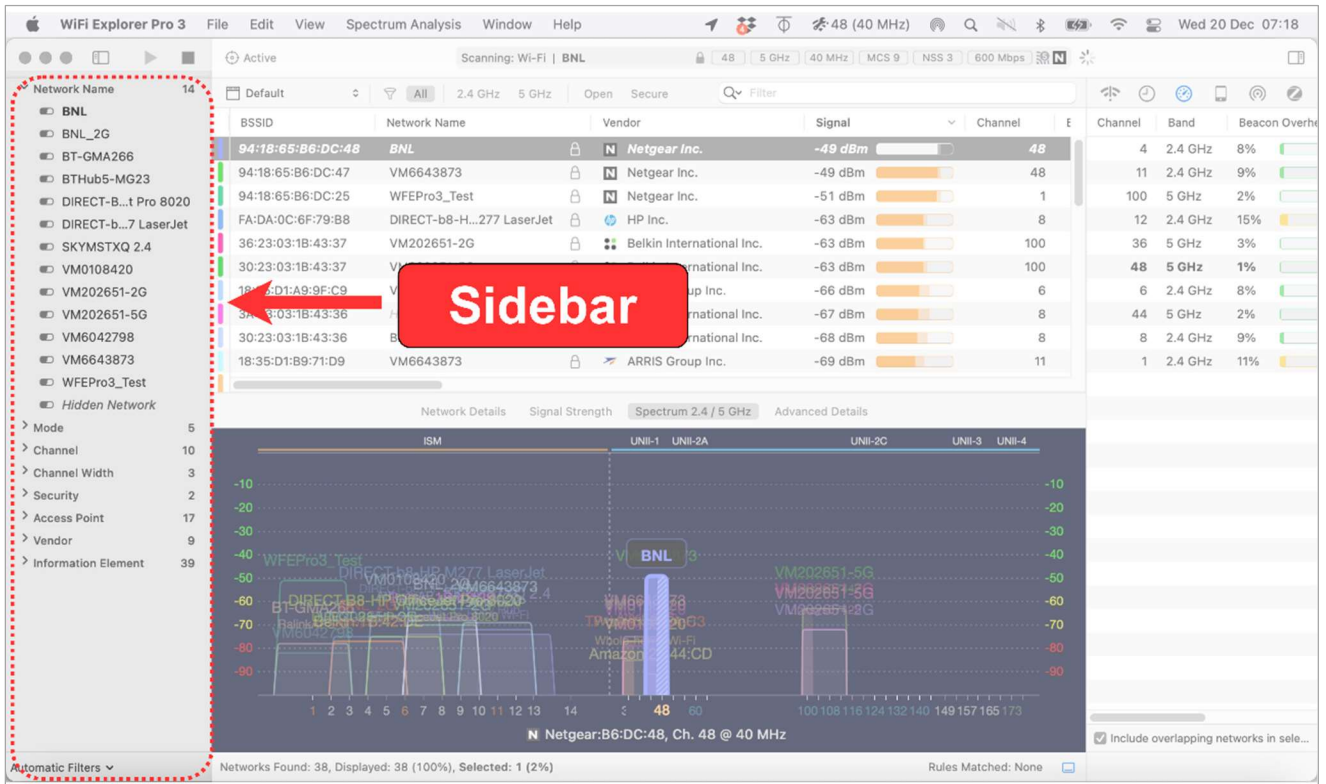


Figure 8-18 - Sidebar UI location



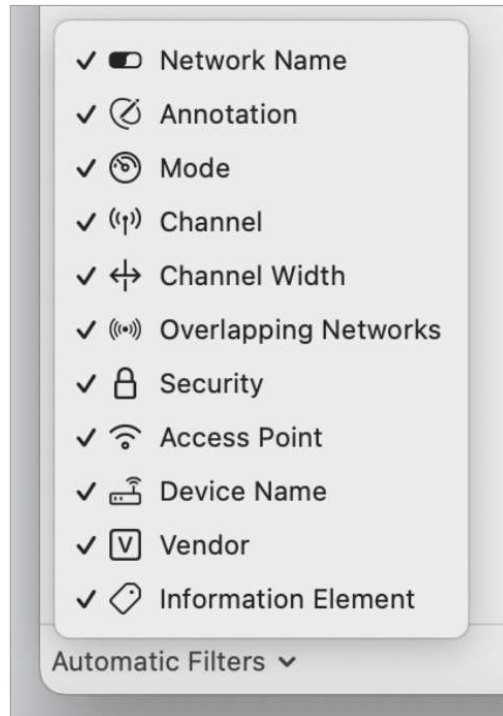


Figure 8-19 - Sidebar Automatic Filter Options

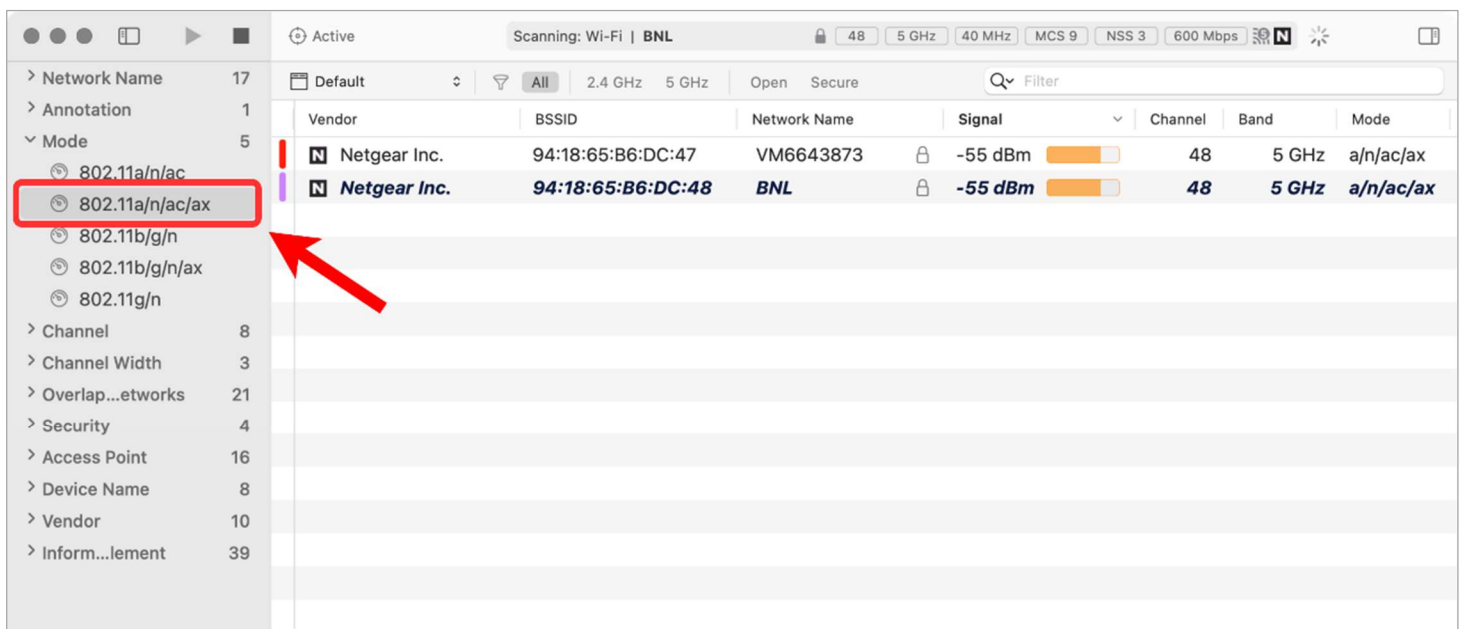


Figure 8-20 - Sidebar filter example using a Mode filter

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

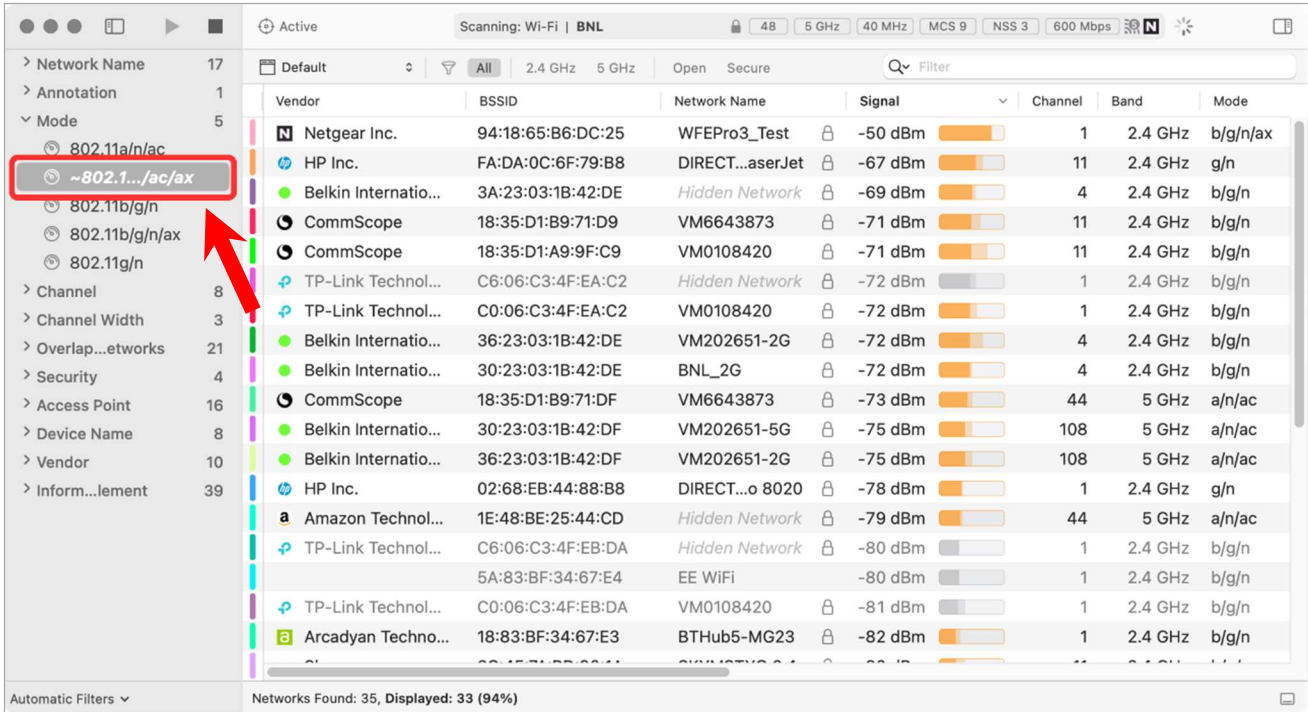


Figure 8-21 - Sidebar filter example using a negated Mode filter

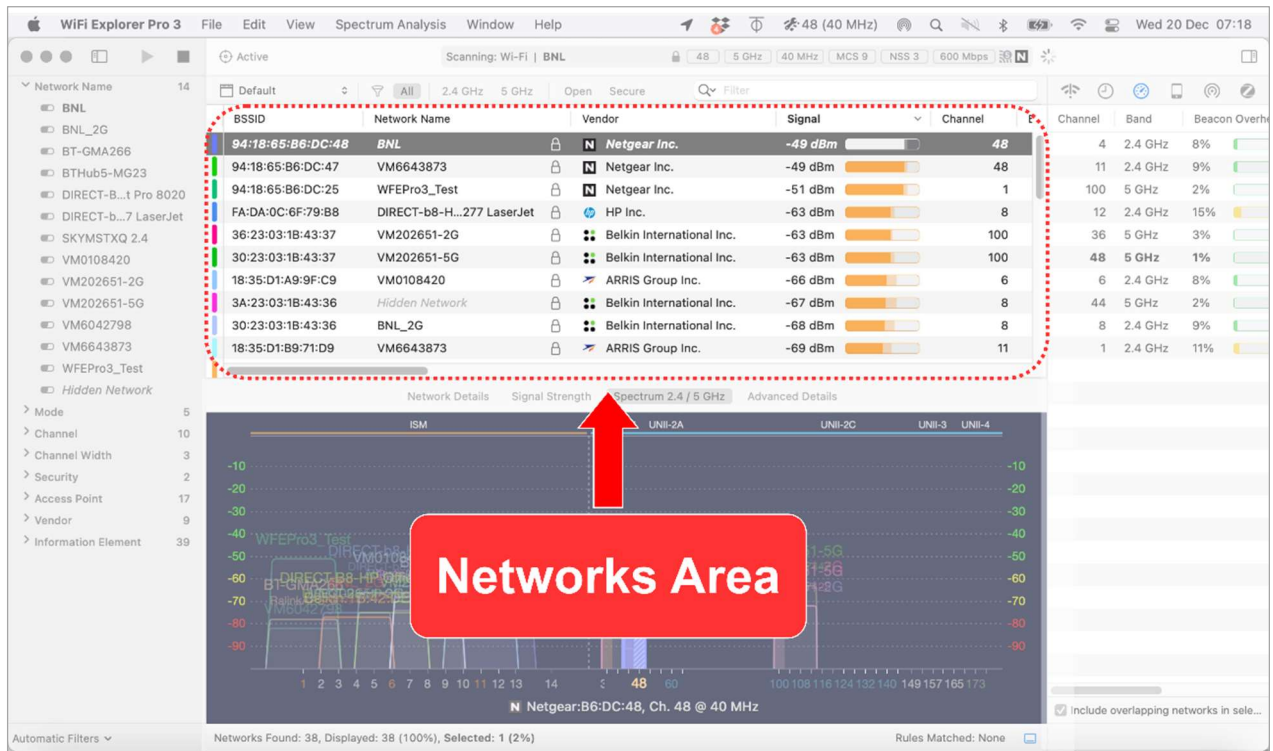


Figure 8-22 - Networks Area UI location (also referred to as the "networks table")

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

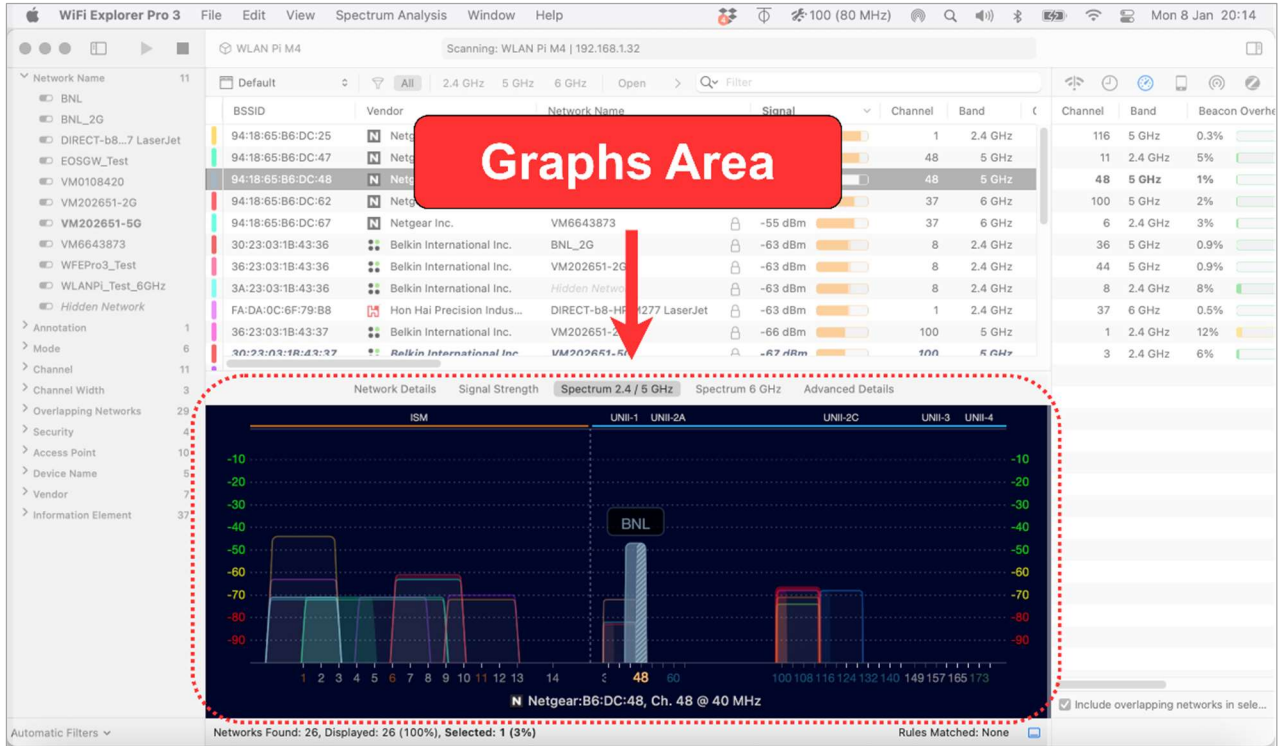


Figure 8-23 - Graphs Area UI location

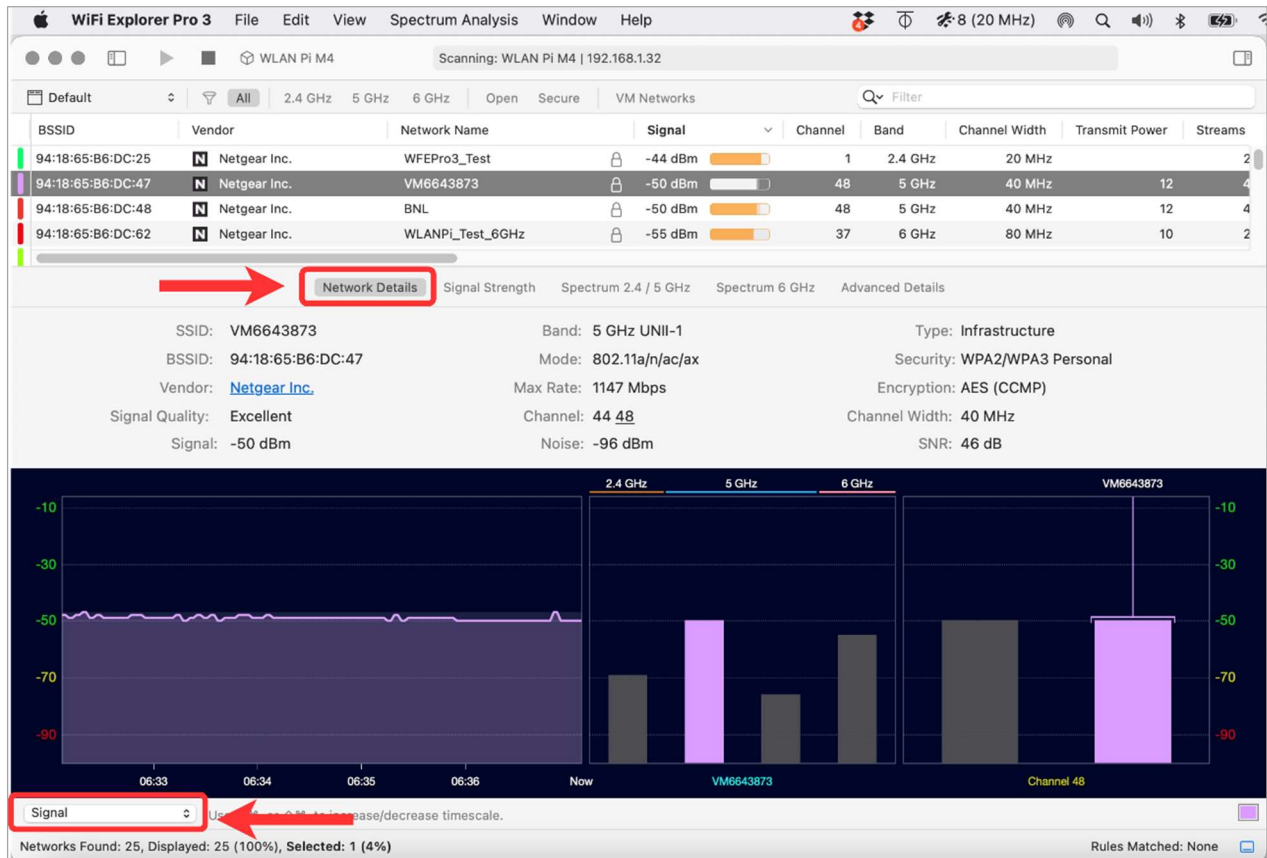


Figure 8-24- Graphs Area: Network Details panel

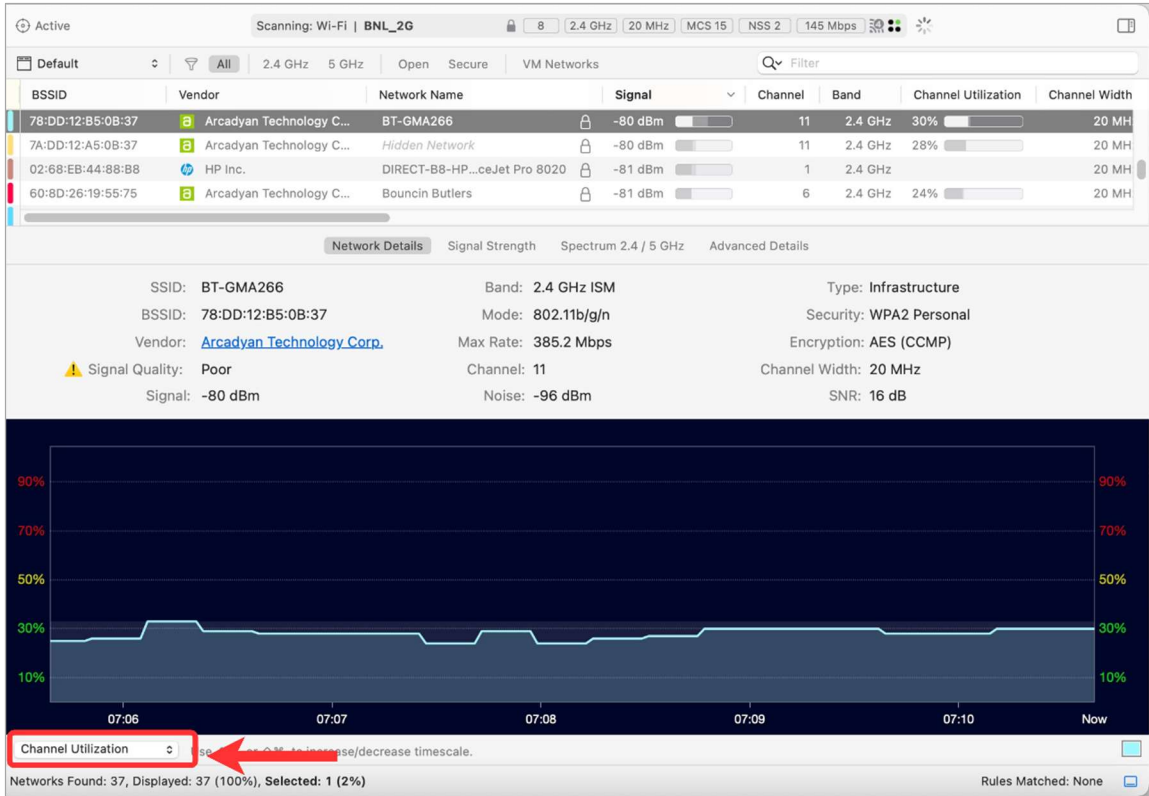


Figure 8-25 - Graphs Area: Network Details panel showing channel utilization graph

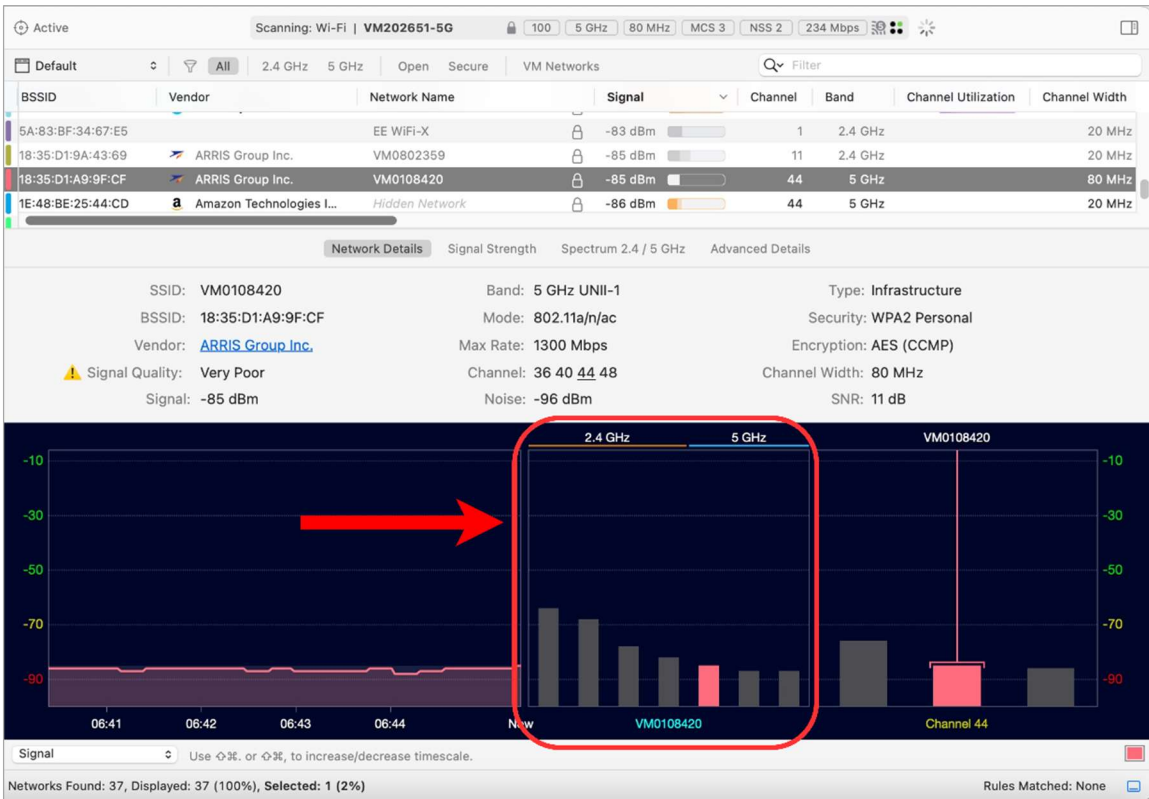


Figure 8-26 - Graphs Area: Network Details panel with SSID Band Peers Graph highlighted



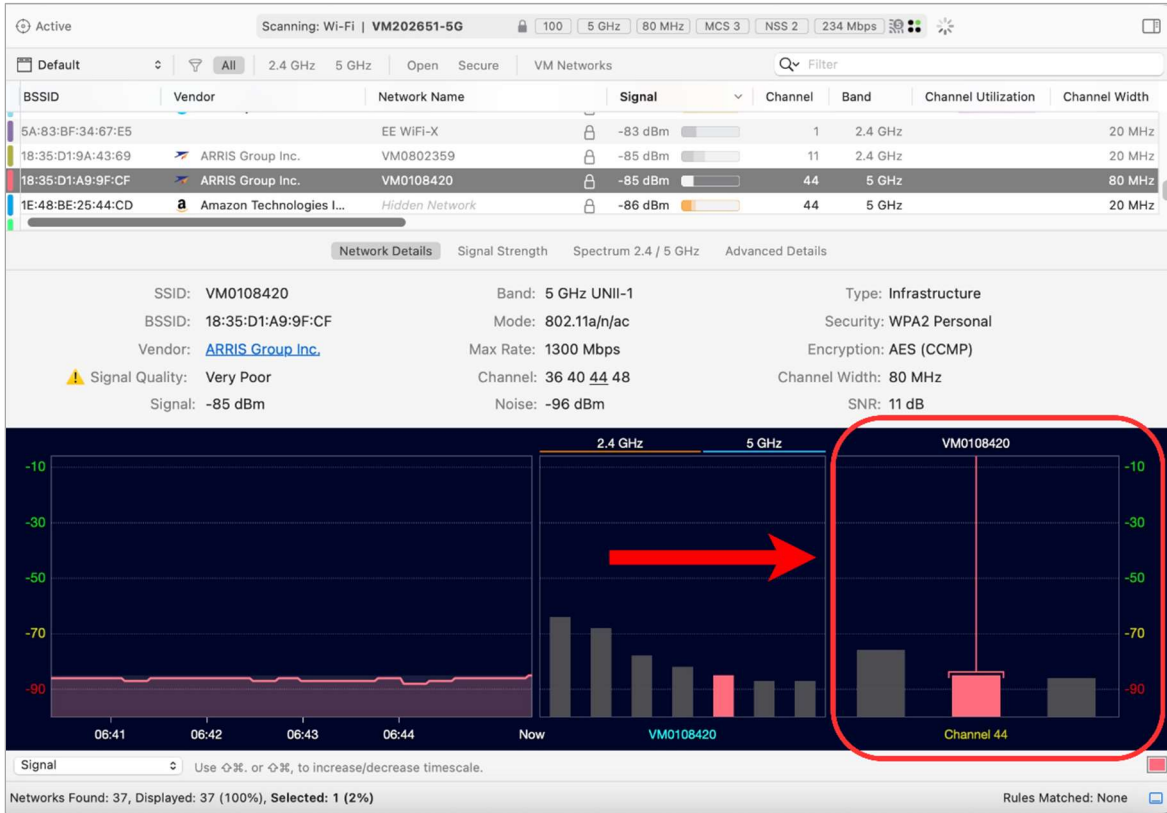


Figure 8-27 - Graphs Area: Network Details panel with the Channel Peers Graph highlighted

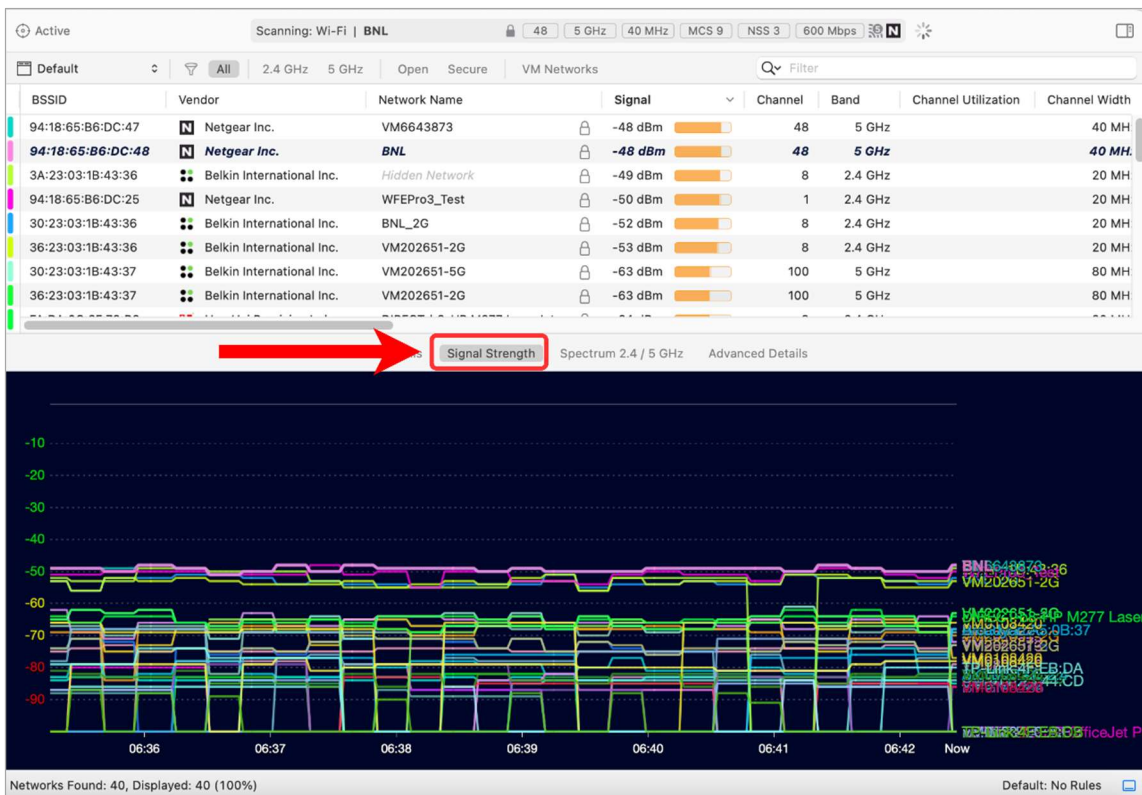


Figure 8-28 - Graphs Area: Signal Strength panel, all networks

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

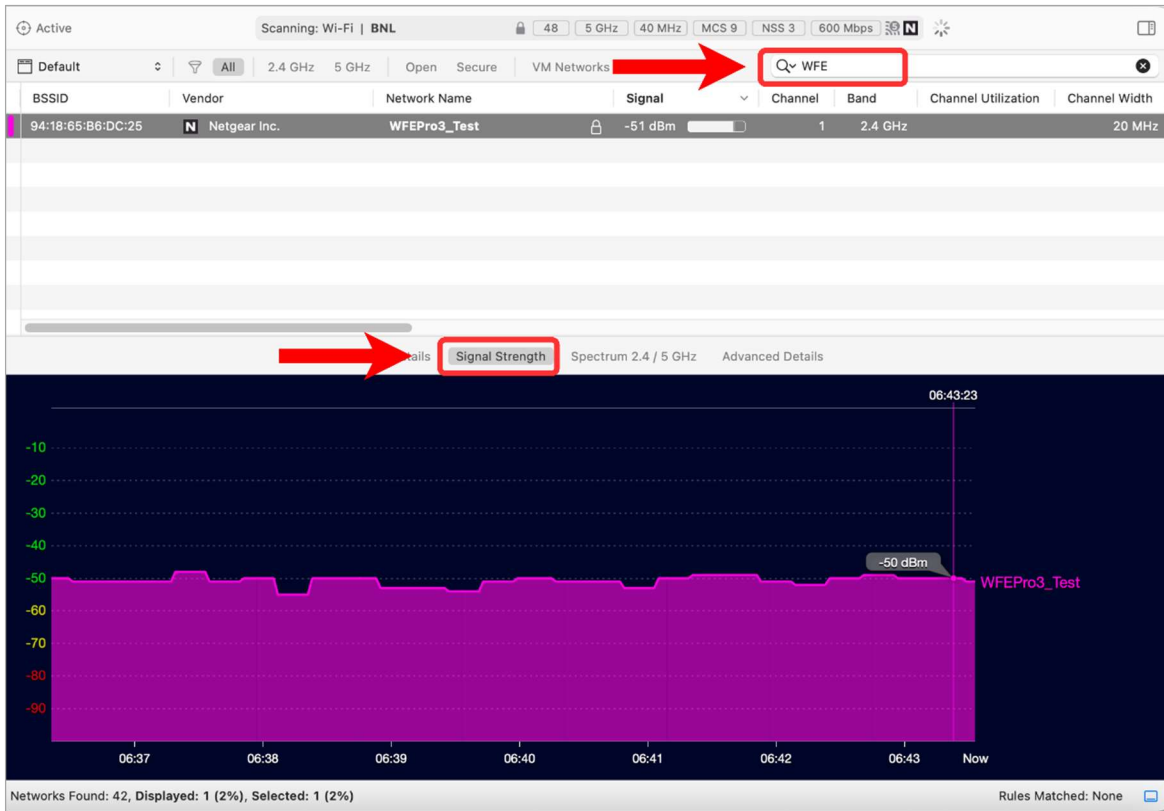


Figure 8-29 - Graphs Area: Signal Strength panel showing a single filtered BSSID

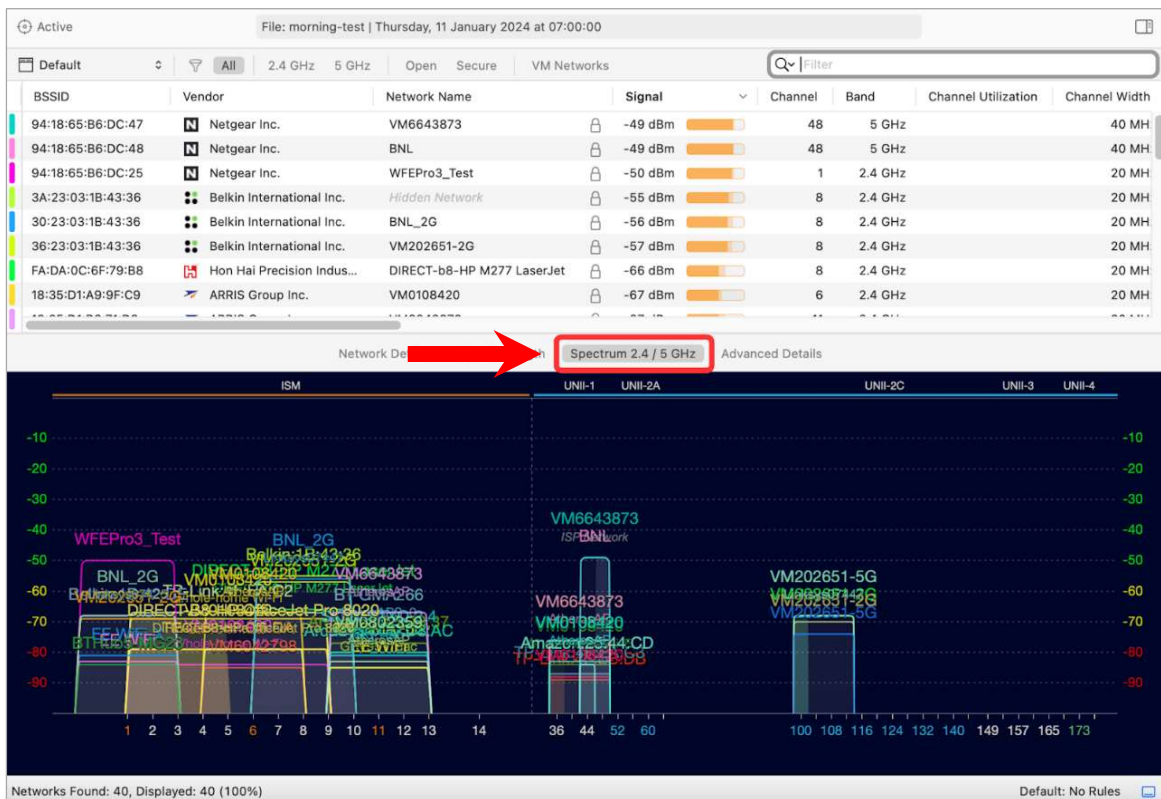


Figure 8-30 - Graphs Area: Spectrum 2.4/5 GHz panel showing all networks



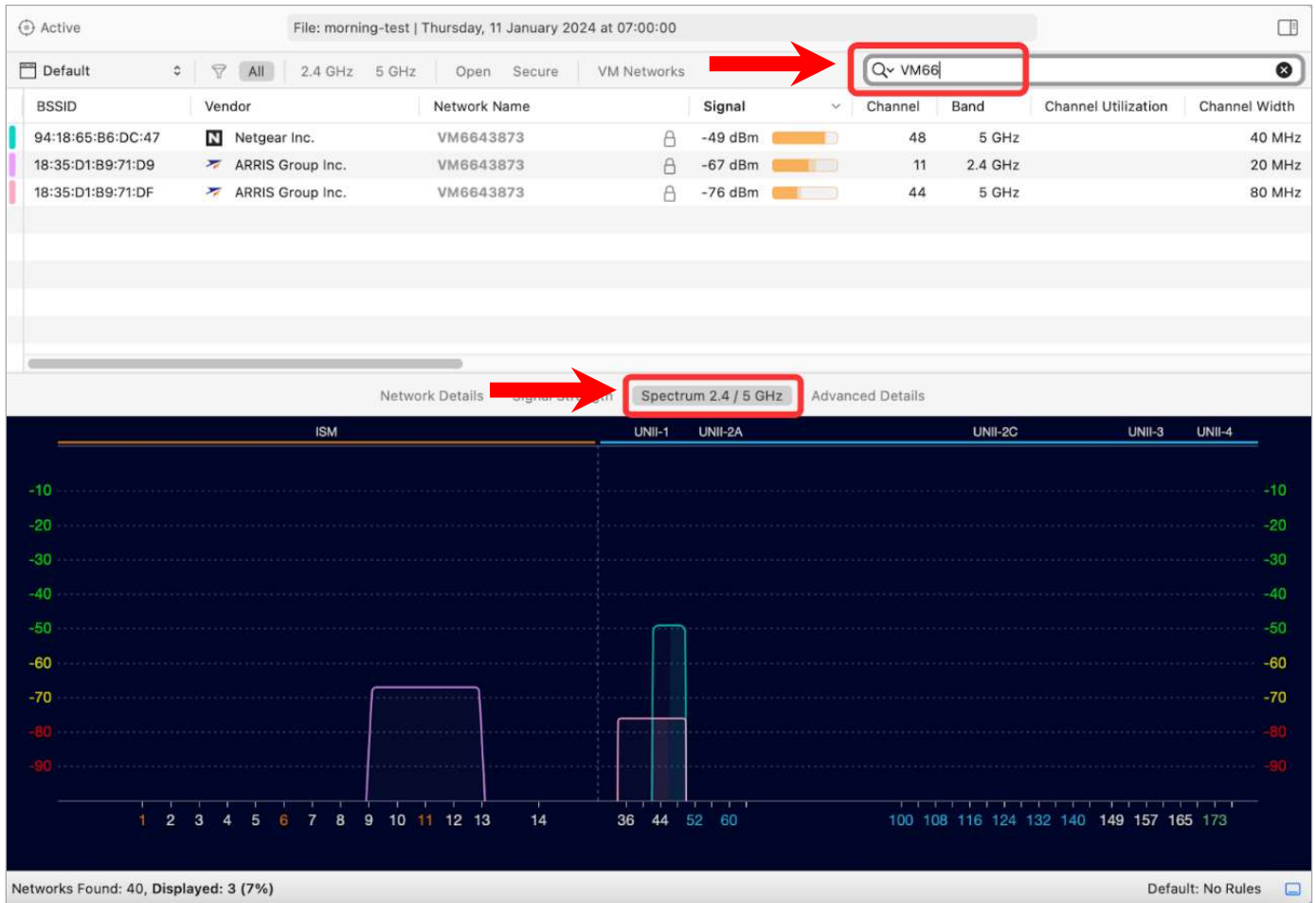


Figure 8-31 - *Graphs Area*: Spectrum 2.4/5 GHz panel showing a filtered network



Figure 8-32 - *Graphs Area*: Spectrum 2.4/5 GHz panel indicating a primary channel (ch. 100)

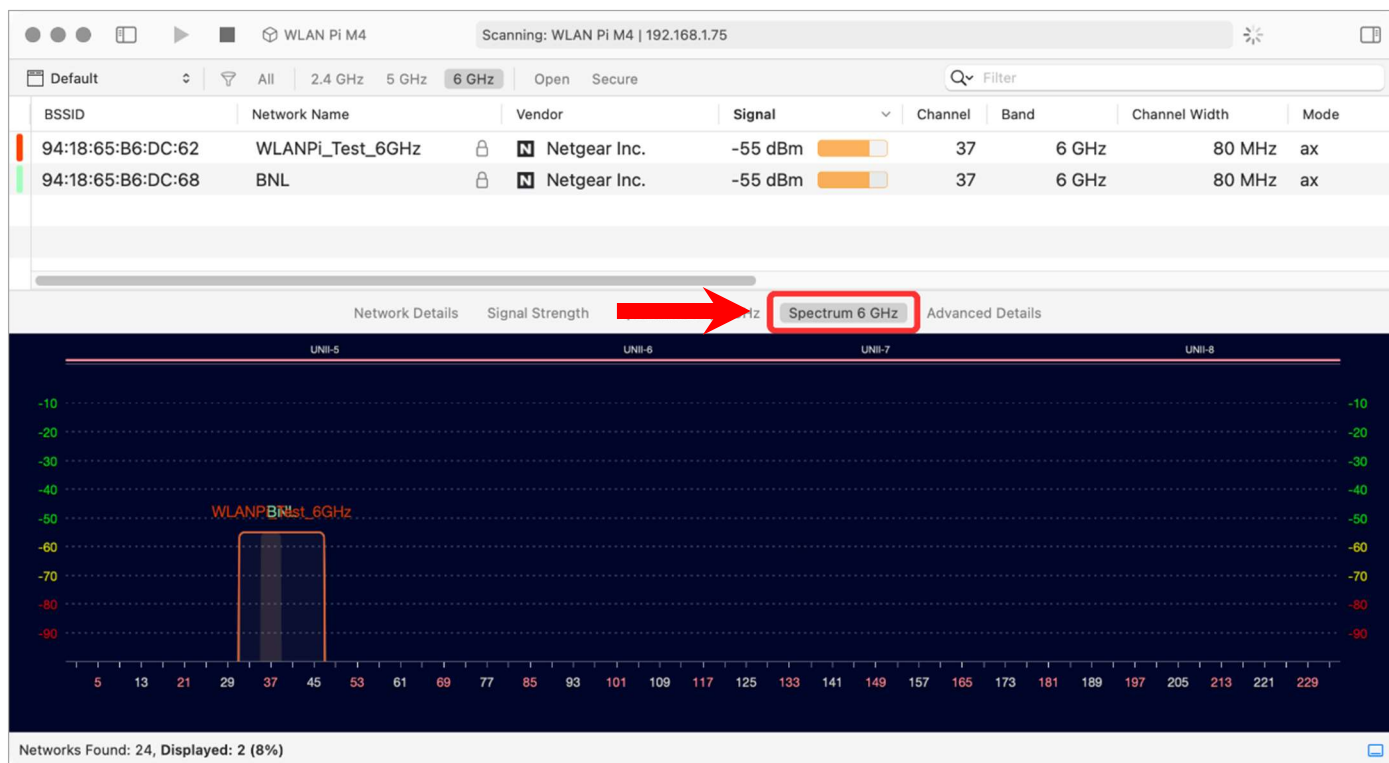


Figure 8-33 - *Graphs Area*: Spectrum 6 GHz panel showing two networks

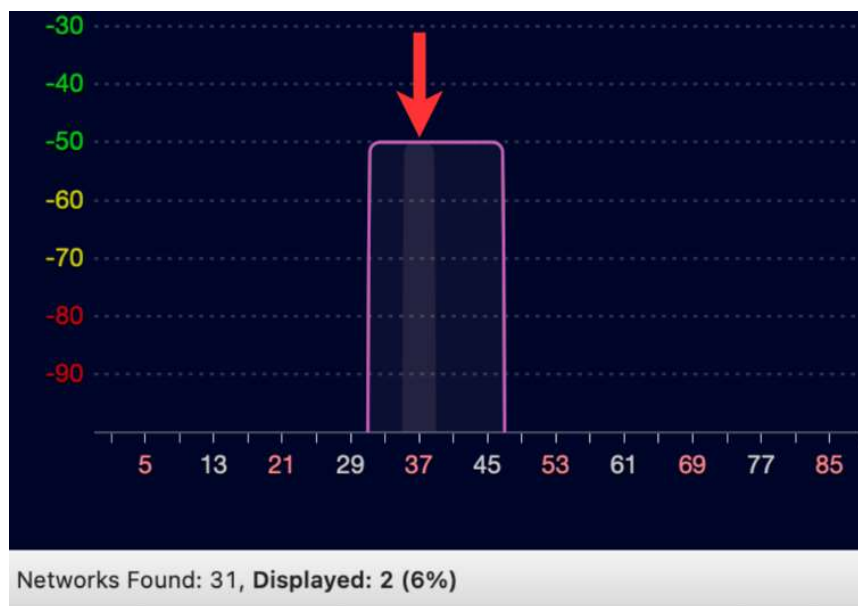


Figure 8-34 - *Graphs Area*: Spectrum 6 GHz panel showing a primary channel (Ch. 37)

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

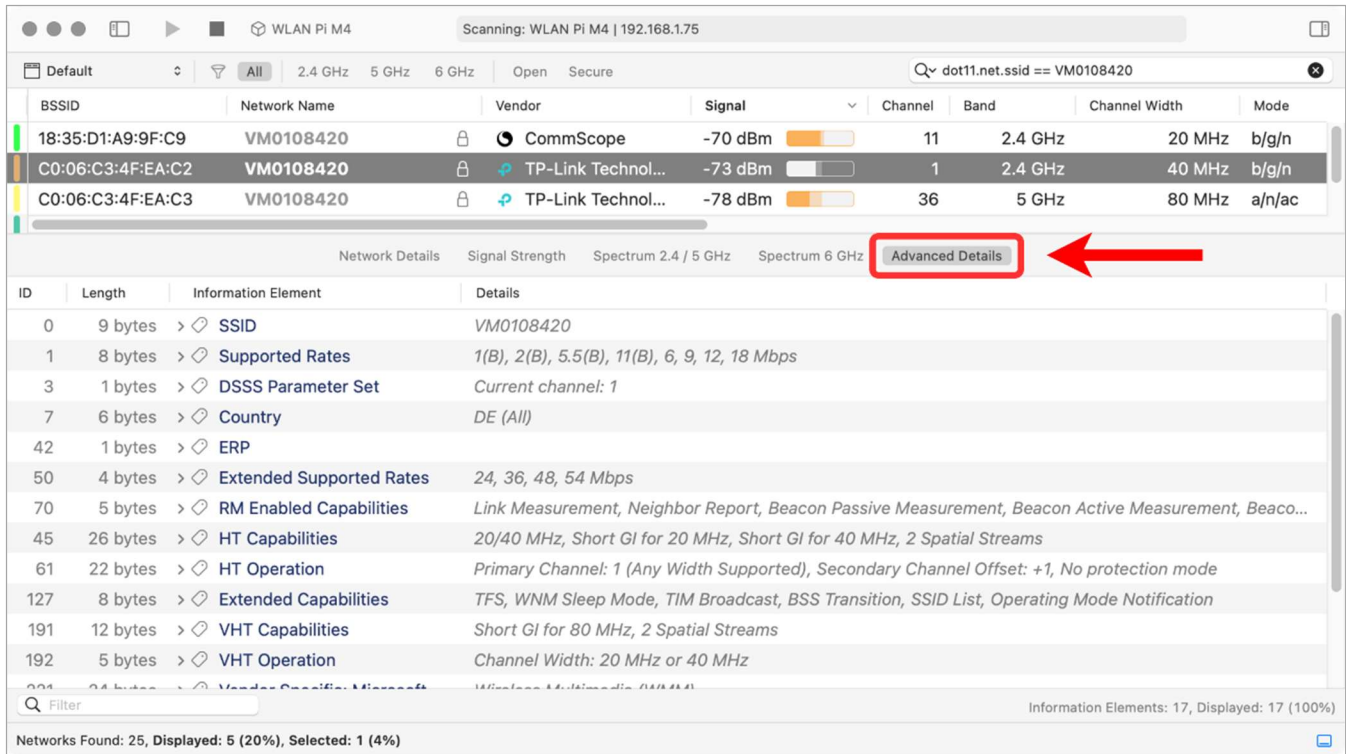


Figure 8-35 - Graphs Area: Advanced Details panel showing IEs for a selected network

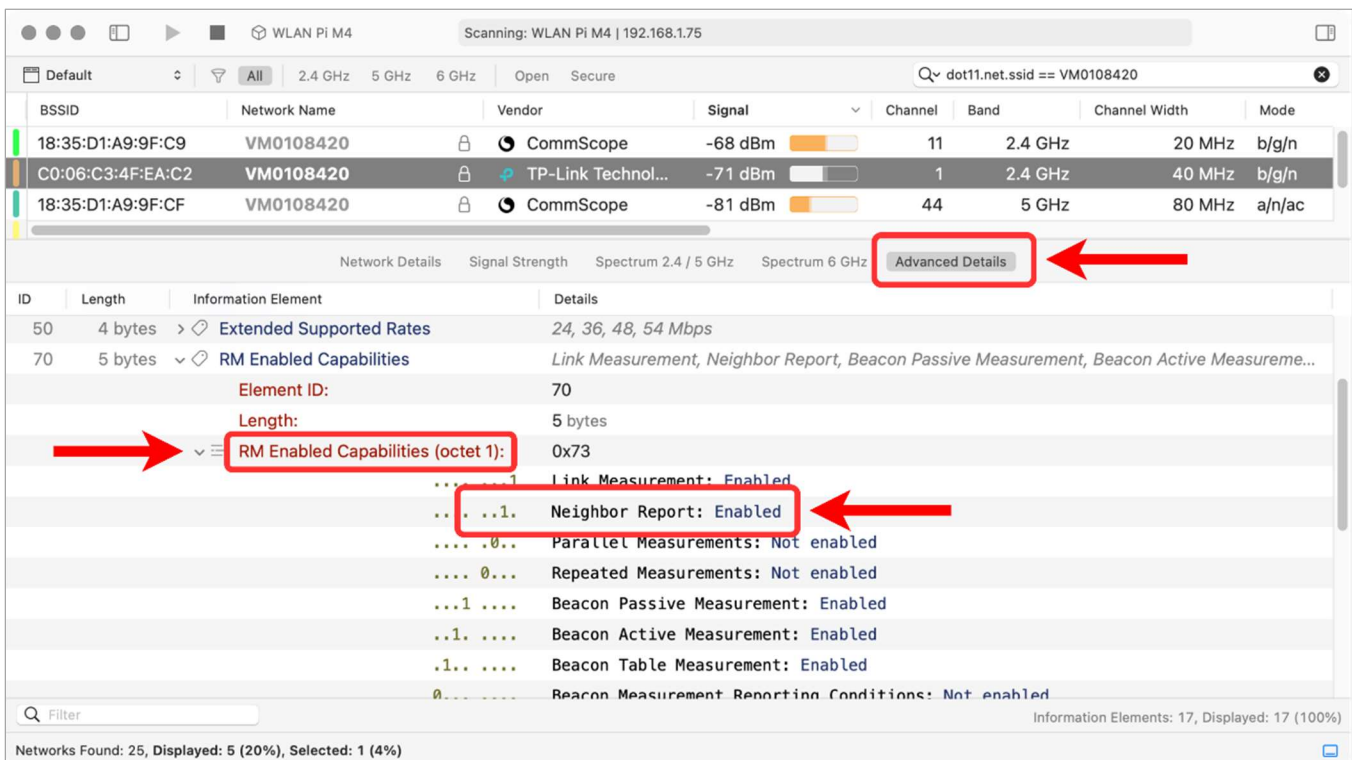


Figure 8-36 - Graphs Area: Advanced Details showing the Neighbor Report field for a selected BSSID

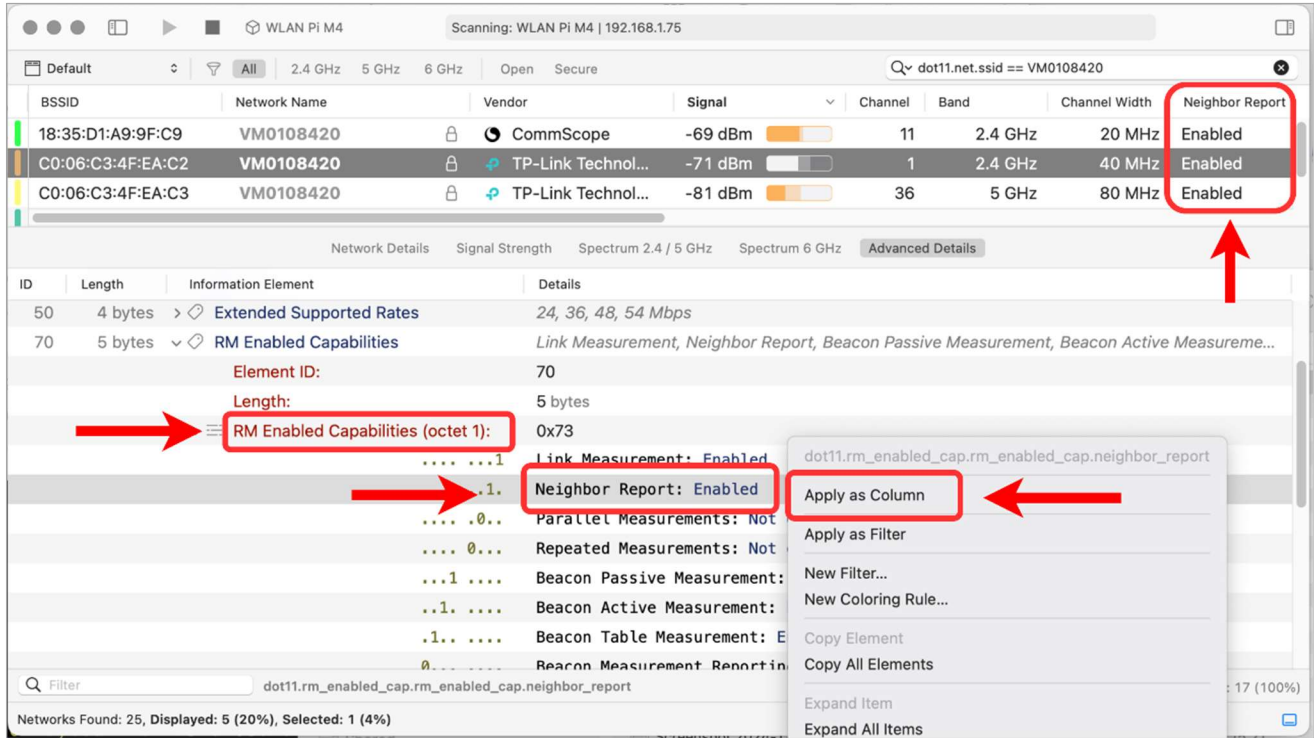


Figure 8-37 - Graphs Area: Advanced Details panel showing how to add Neighbor Report as a column

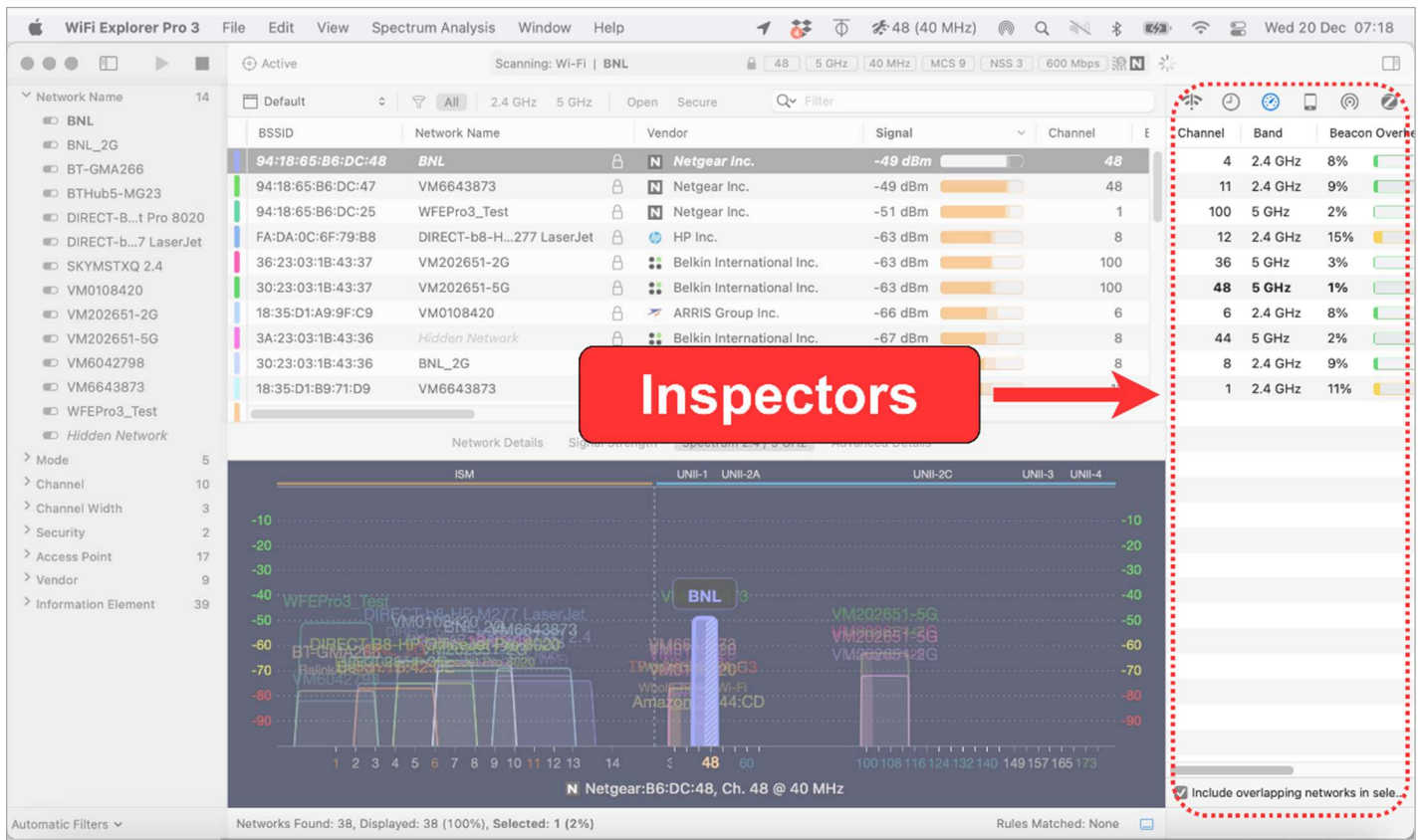


Figure 8-38 - Inspectors UI location



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

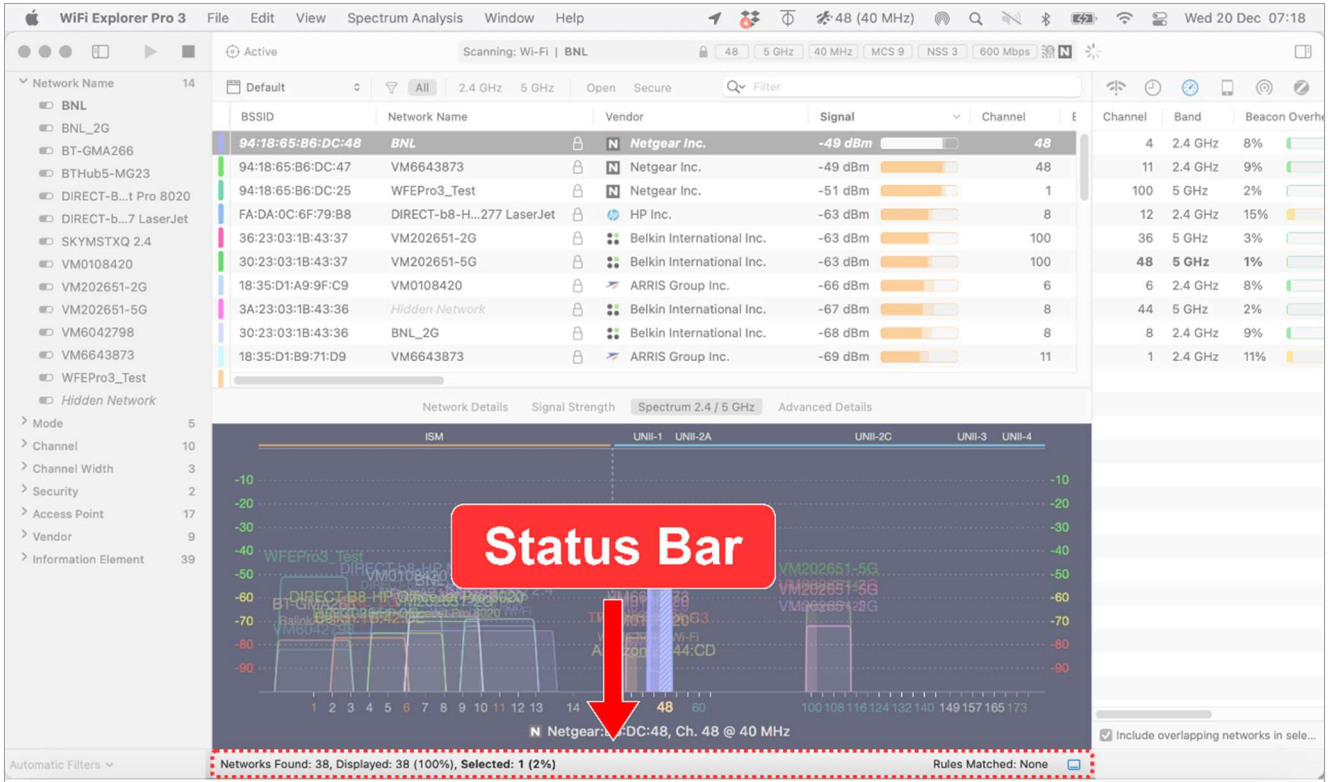


Figure 8-39 - Status Bar UI location

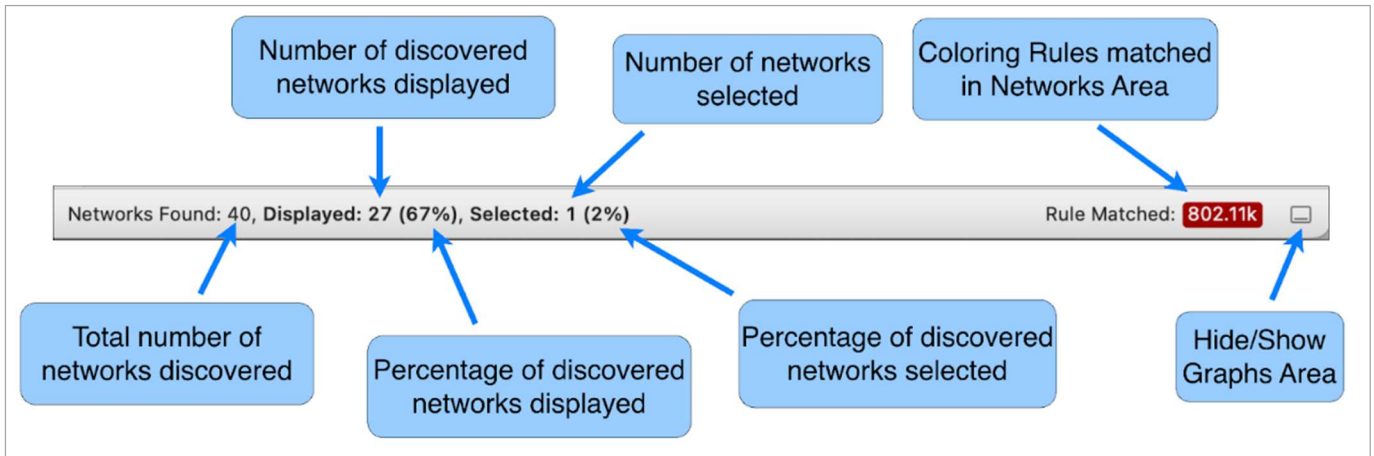


Figure 8-40 - Status Bar Details

## Chapter 9 - WiFi Explorer Pro 3 Settings

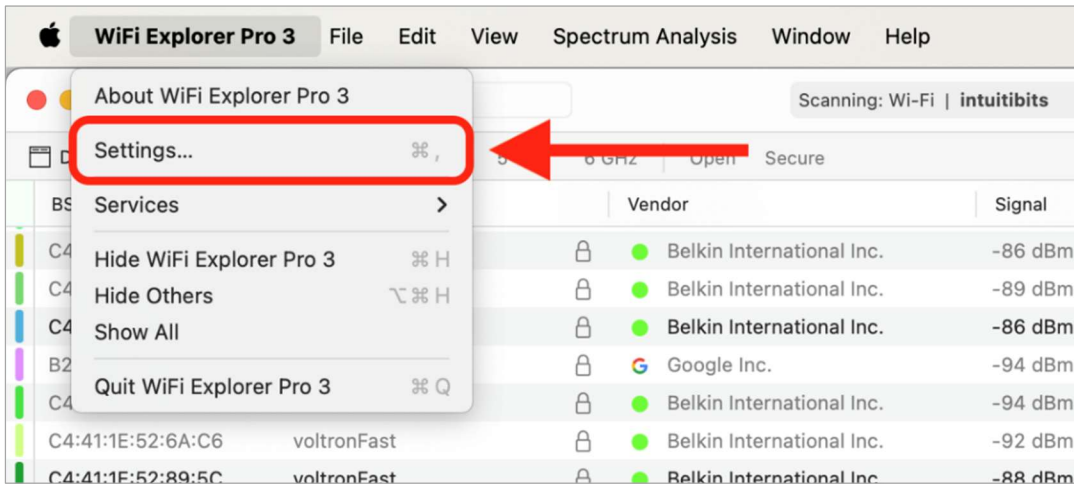


Figure 9-1 - Accessing the *Settings* window

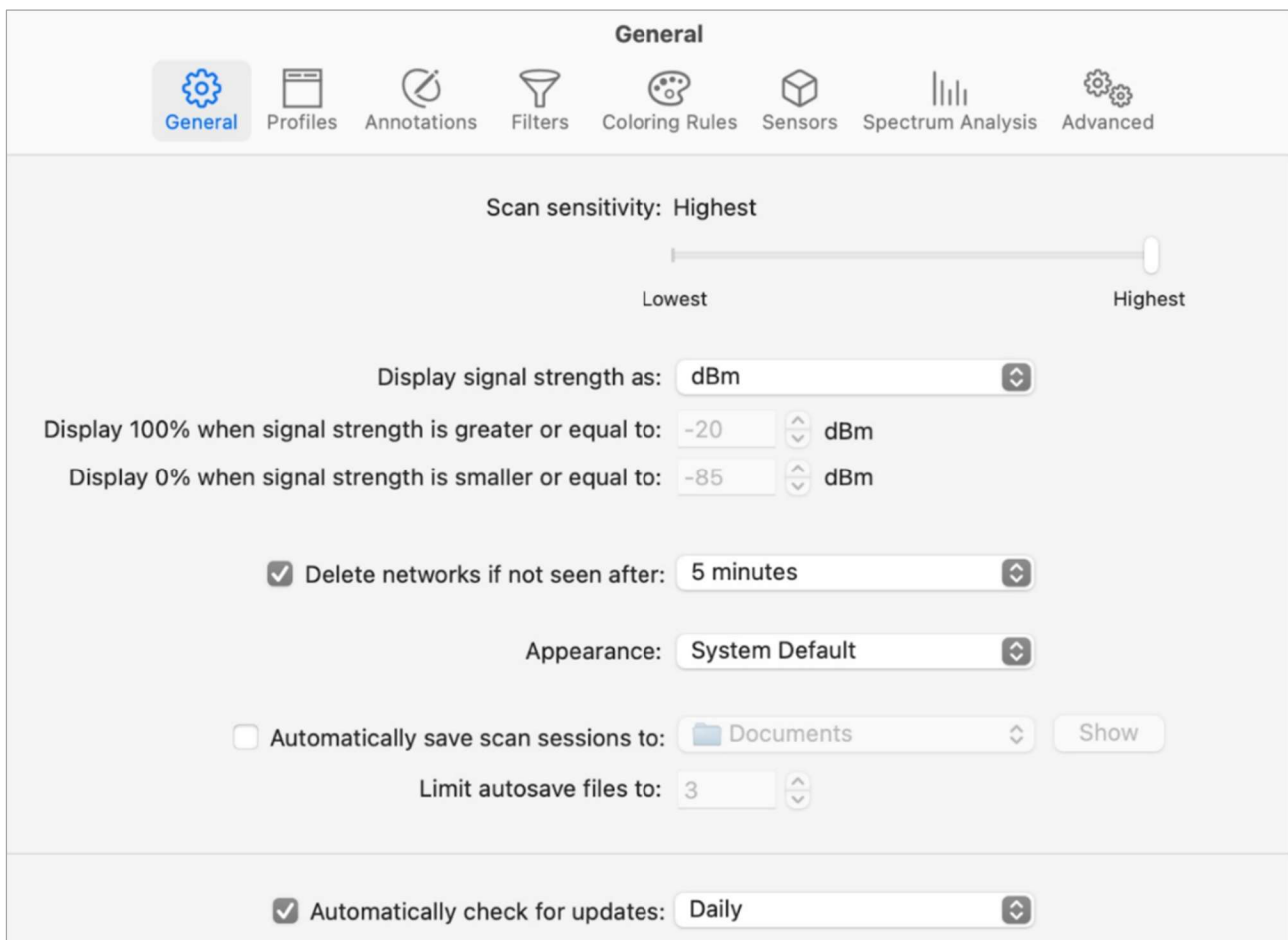


Figure 9-2 - The *General* settings tab



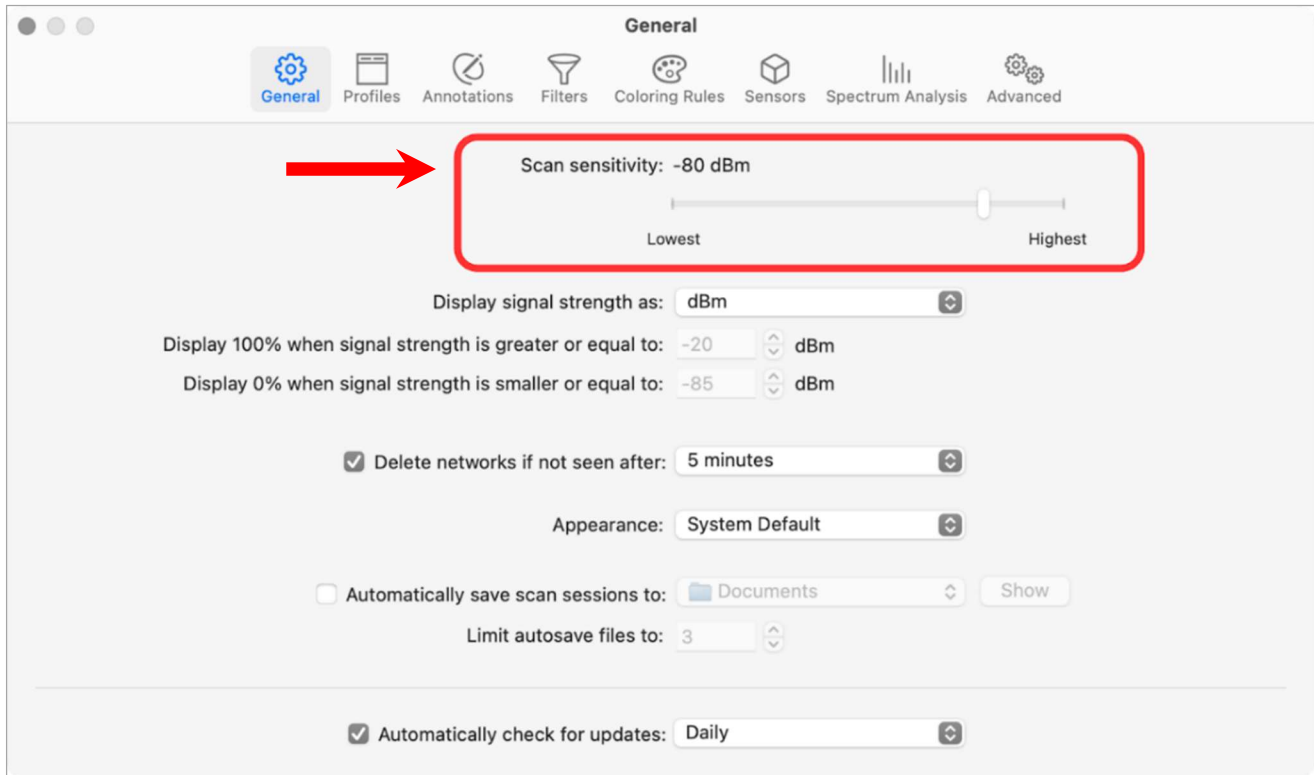


Figure 9-3 - Scan sensitivity adjustment under the *General* settings tab

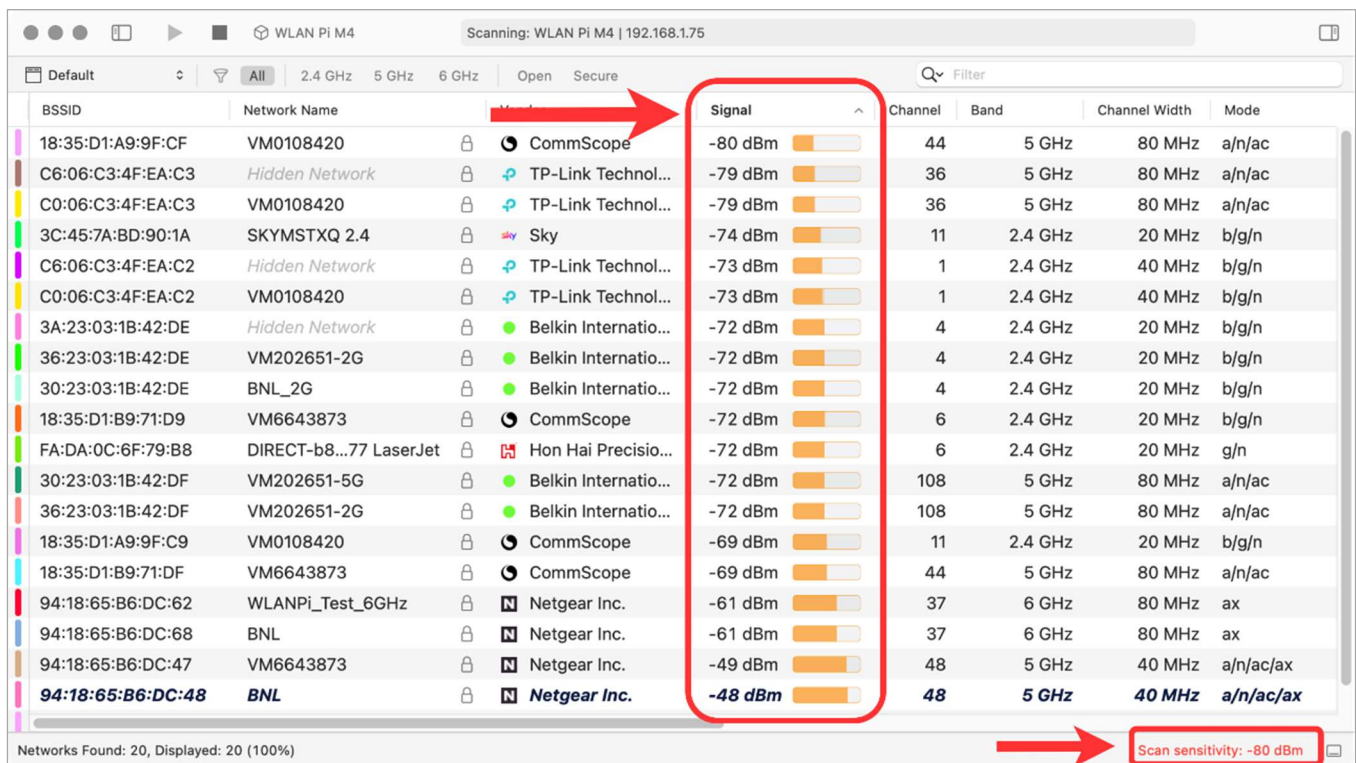


Figure 9-4 - The effect of adjusting scan sensitivity

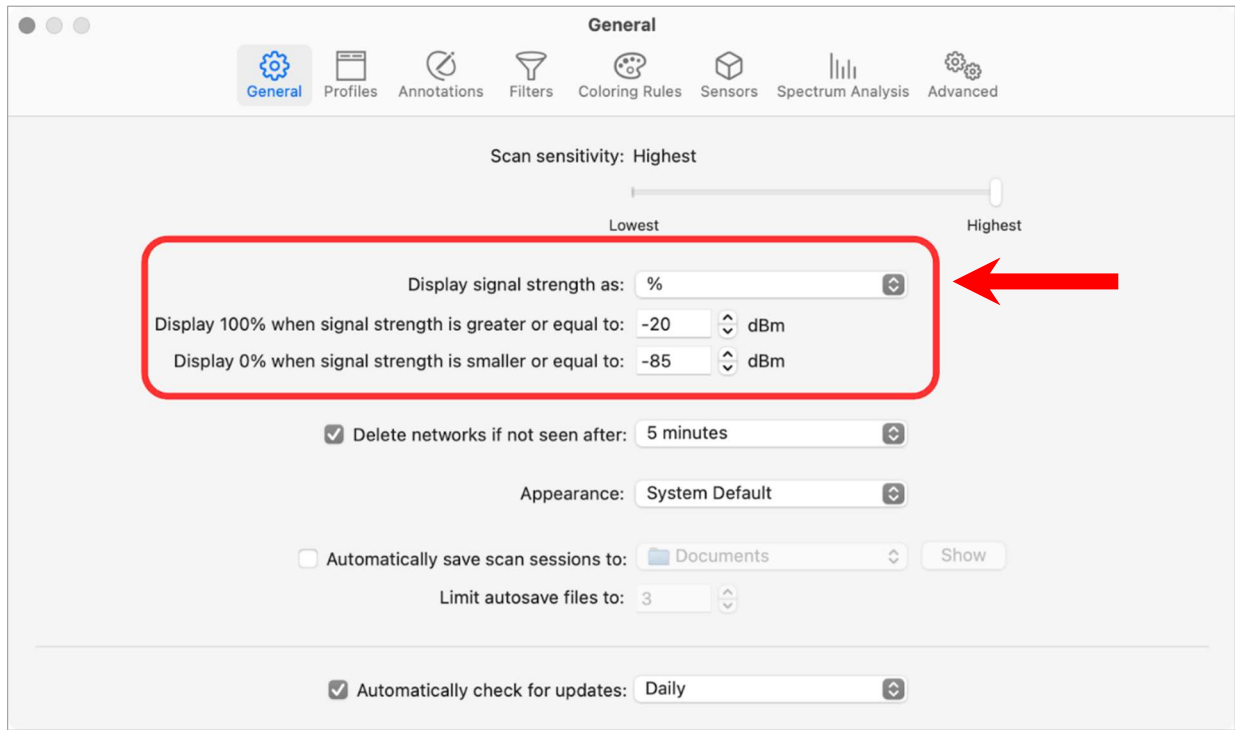


Figure 9-5 - Signal strength units under the *General* settings tab

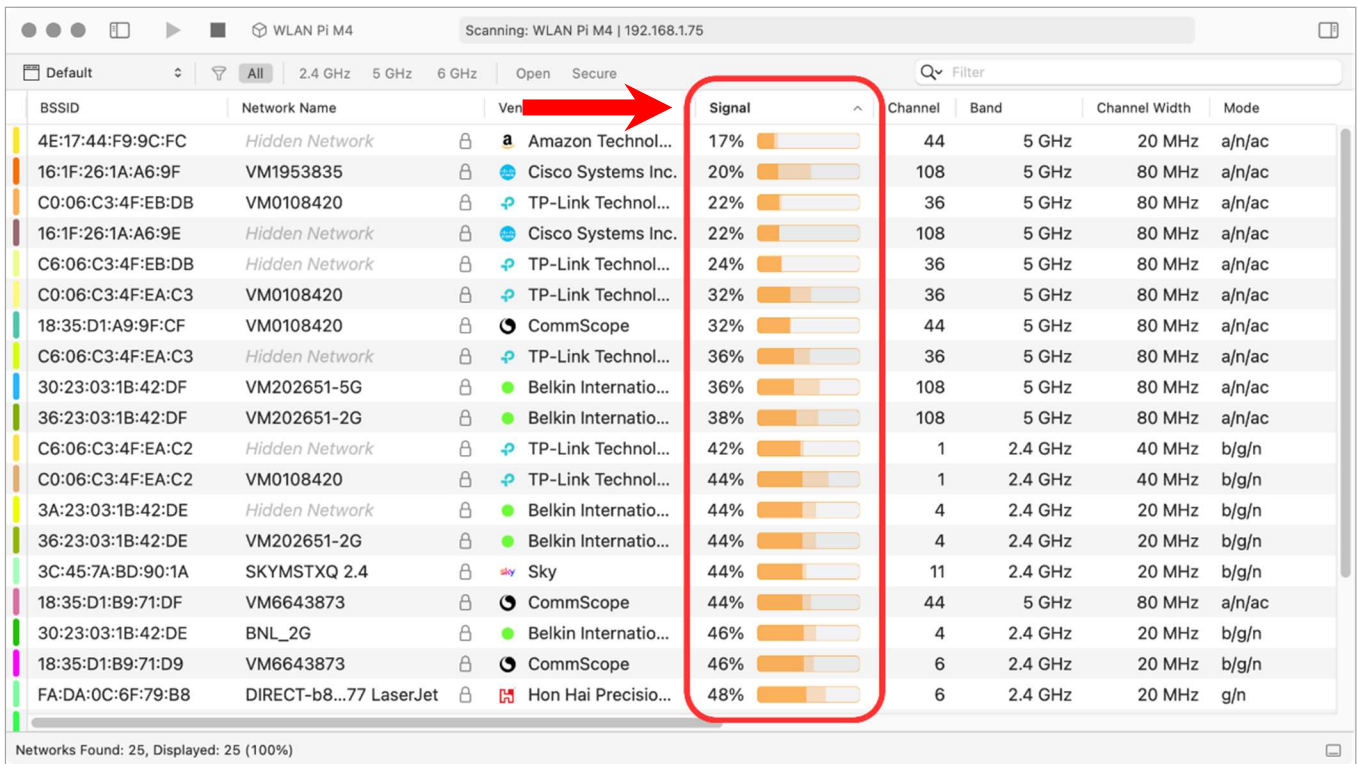


Figure 9-6 - The effect of setting signal level units to percentage values

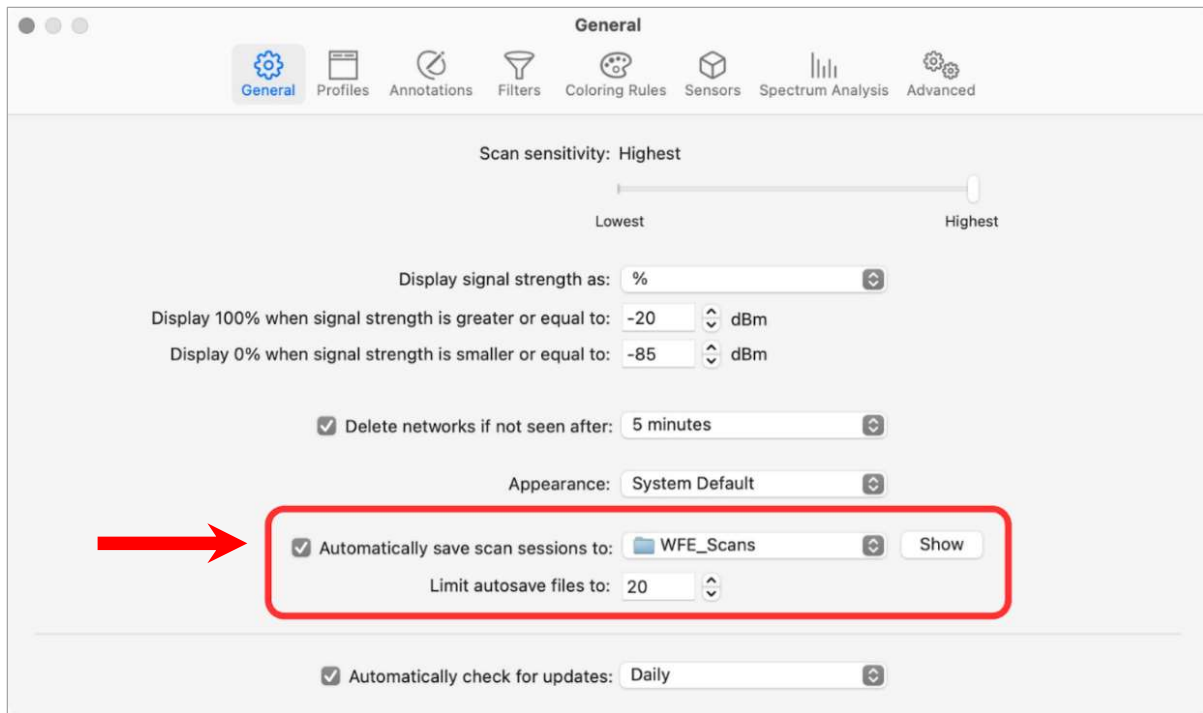


Figure 9-7 - Setting WFE Pro 3 to auto-save scan data to files

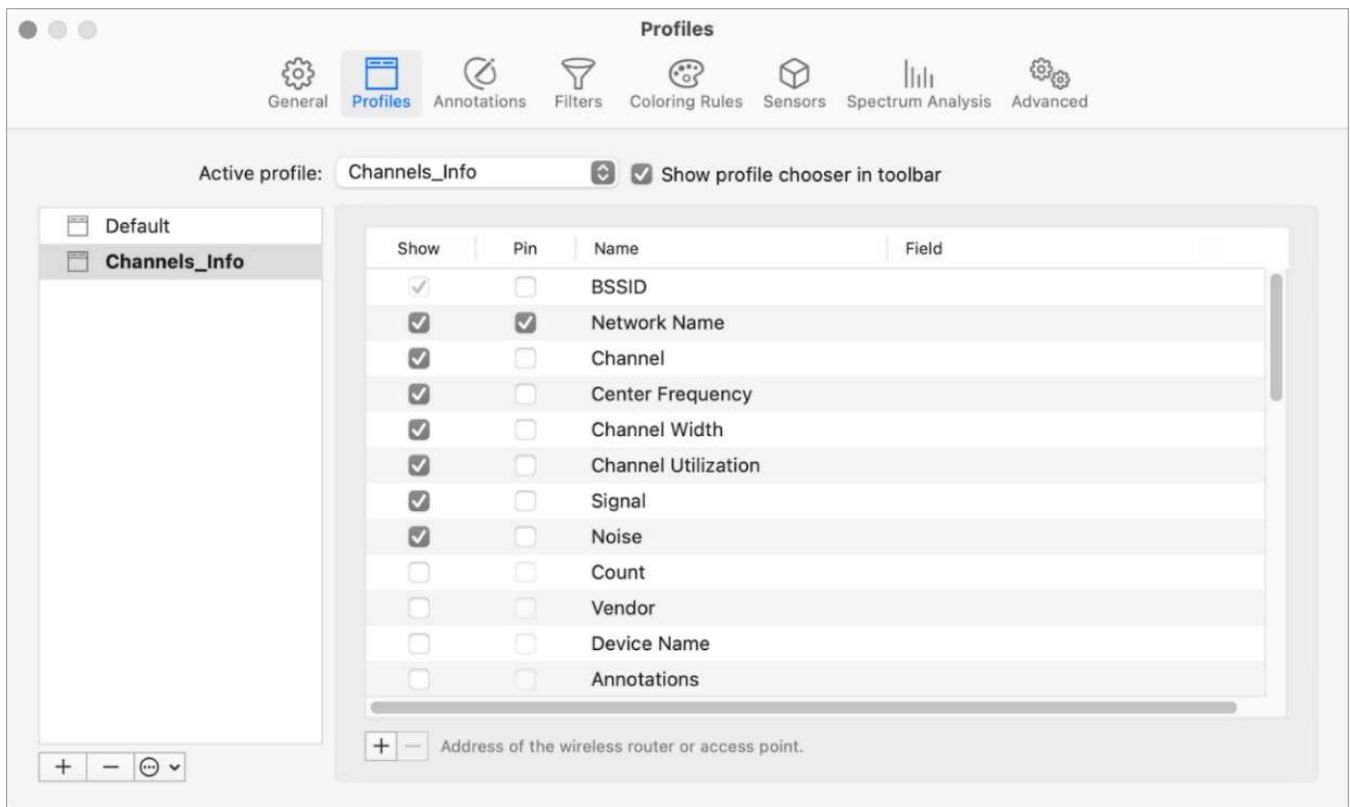


Figure 9-8 - The Profiles settings tab

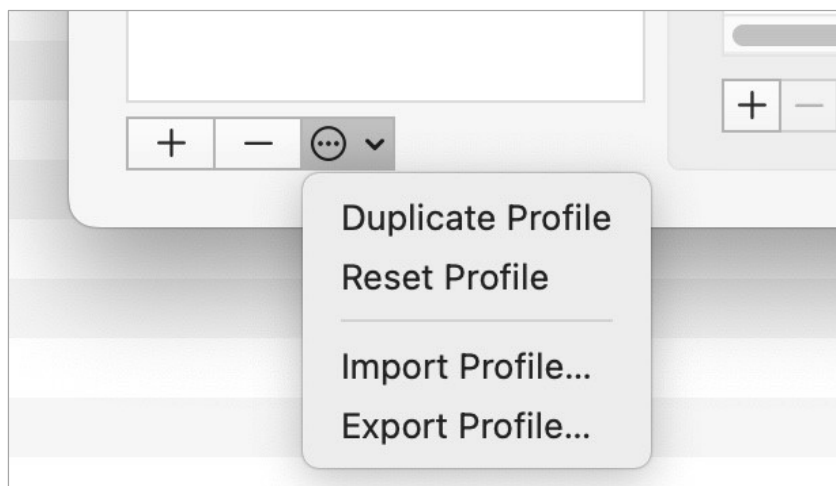


Figure 9-9 - The profiles list *More* button options

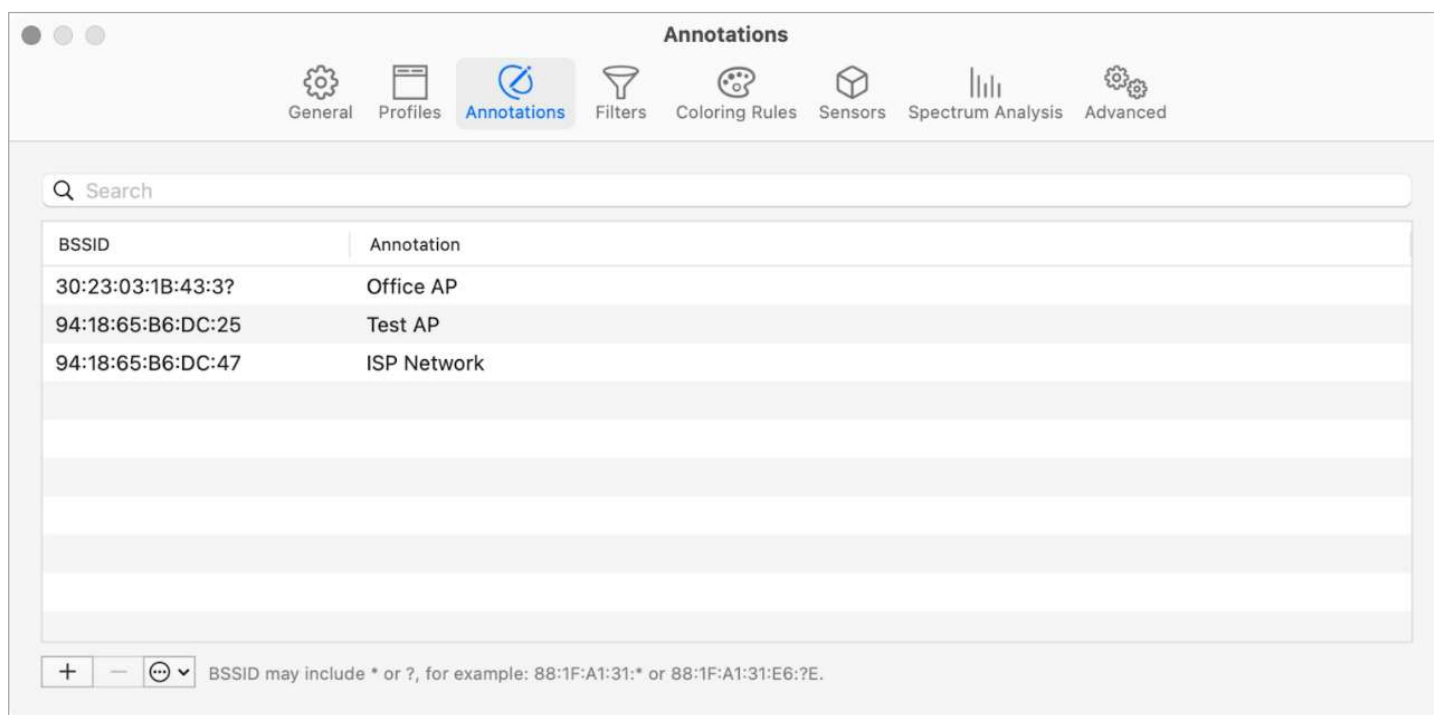


Figure 9-10 - The *Annotations* settings tab

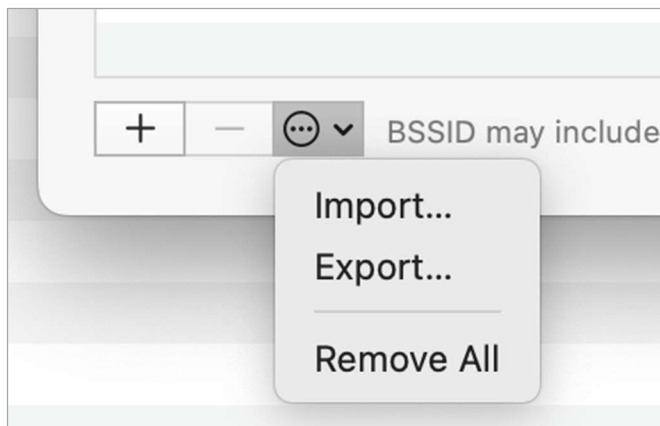


Figure 9-11 - The annotations list *More* button options

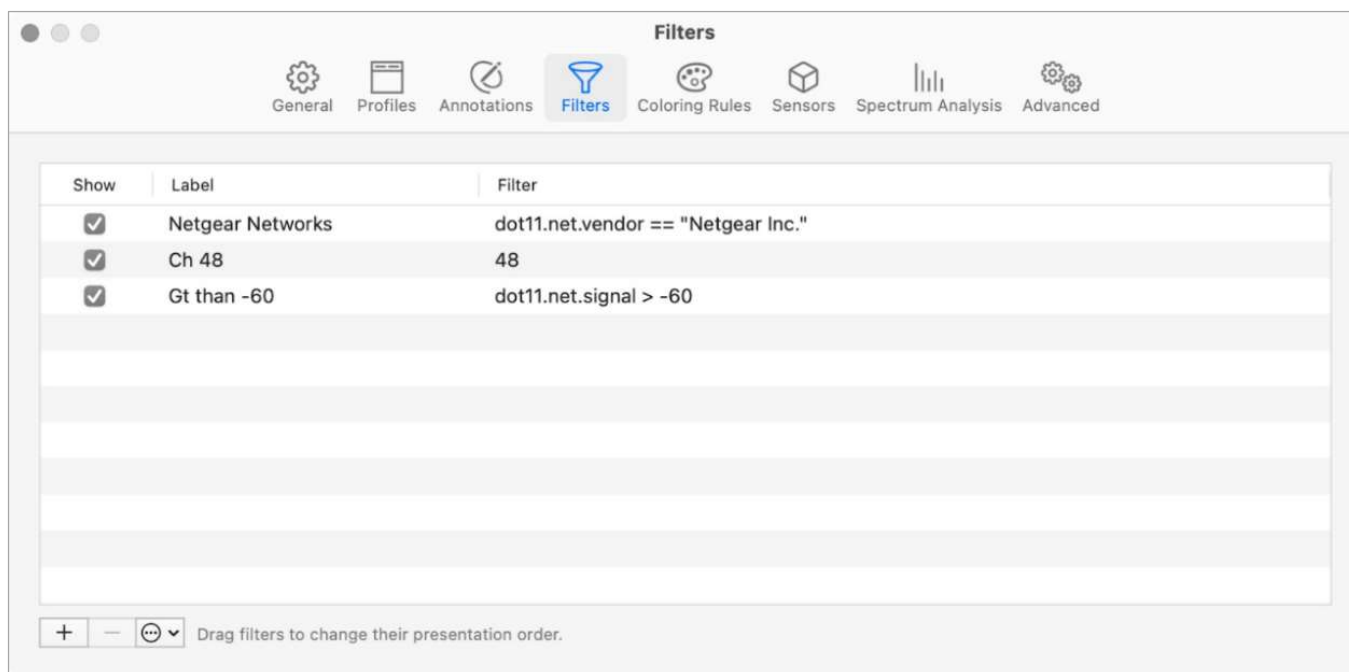


Figure 9-12 – The *Filters* settings tab

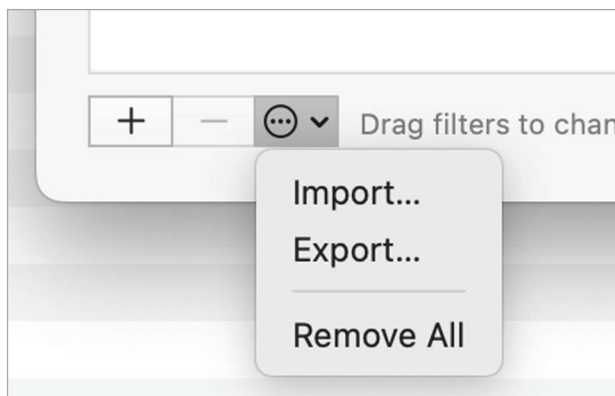


Figure 9-13 - The filters list *More* button options

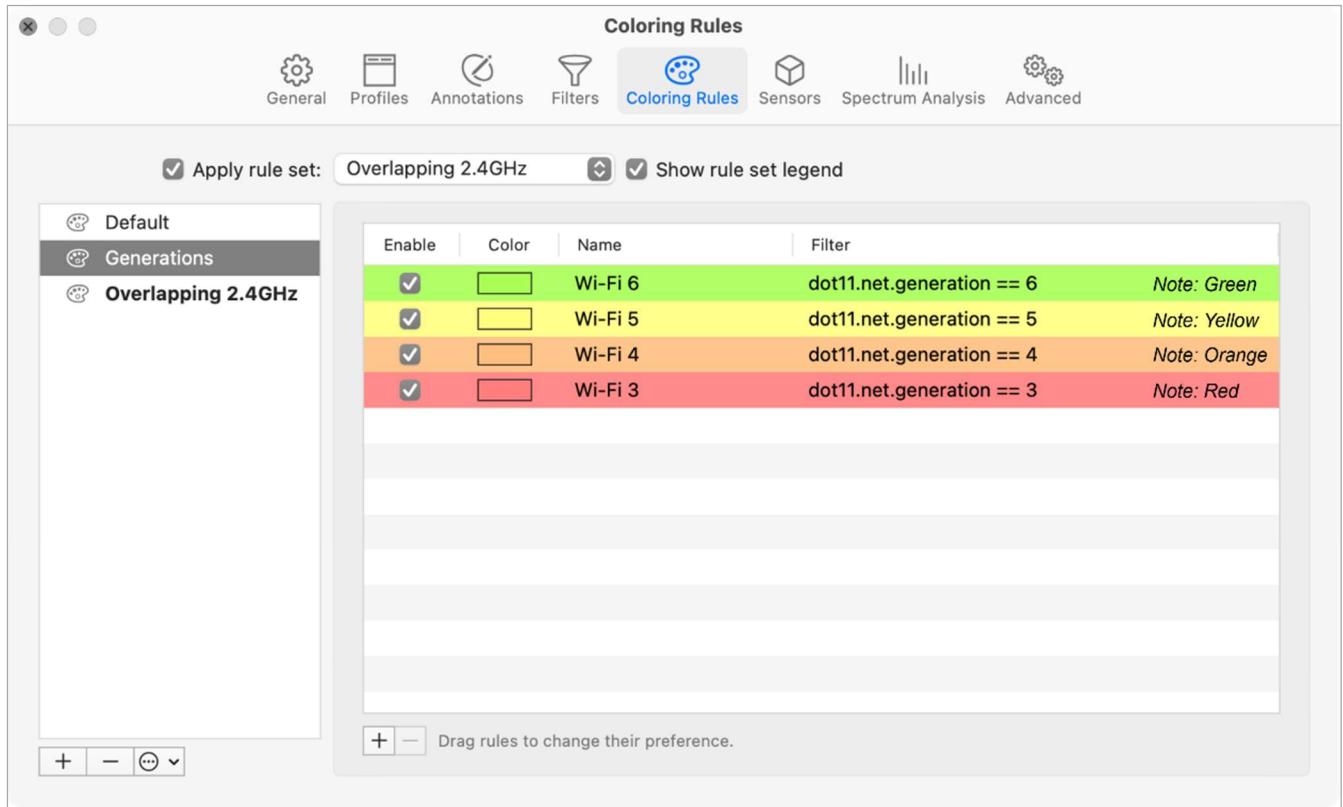


Figure 9-14 - The *Coloring Rules* settings tab

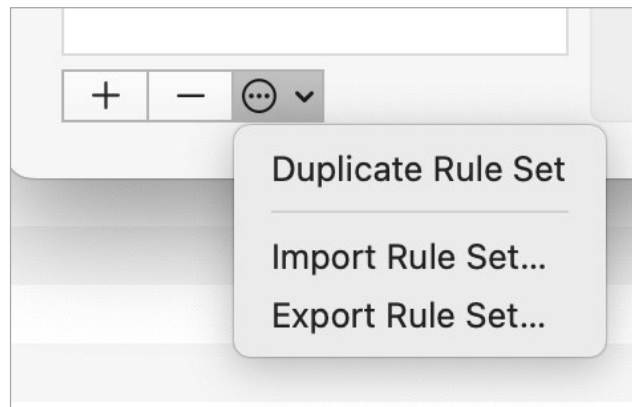


Figure 9-15 - The coloring rule sets list *More* button options



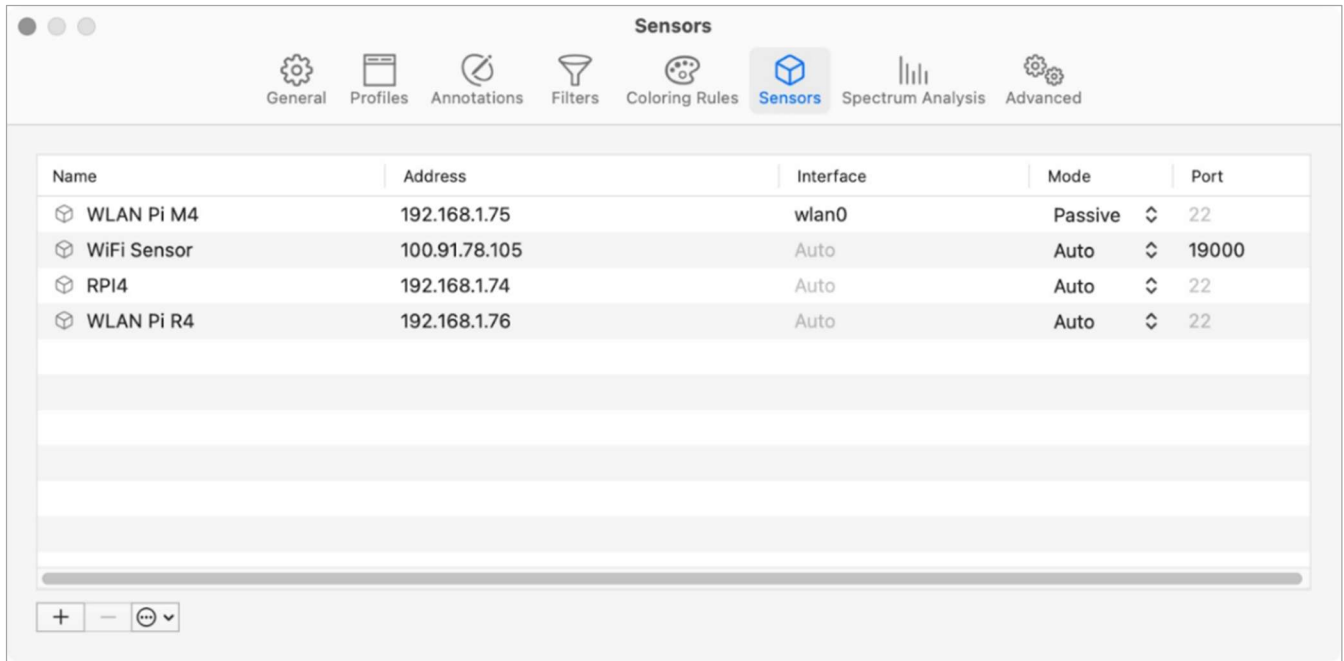


Figure 9-16 - The *Sensors* settings tab

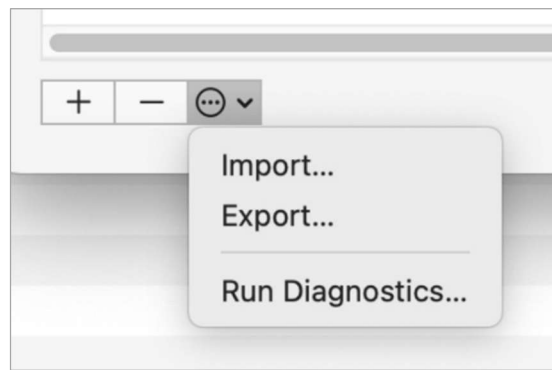


Figure 9-17 - The sensors list *More* button options

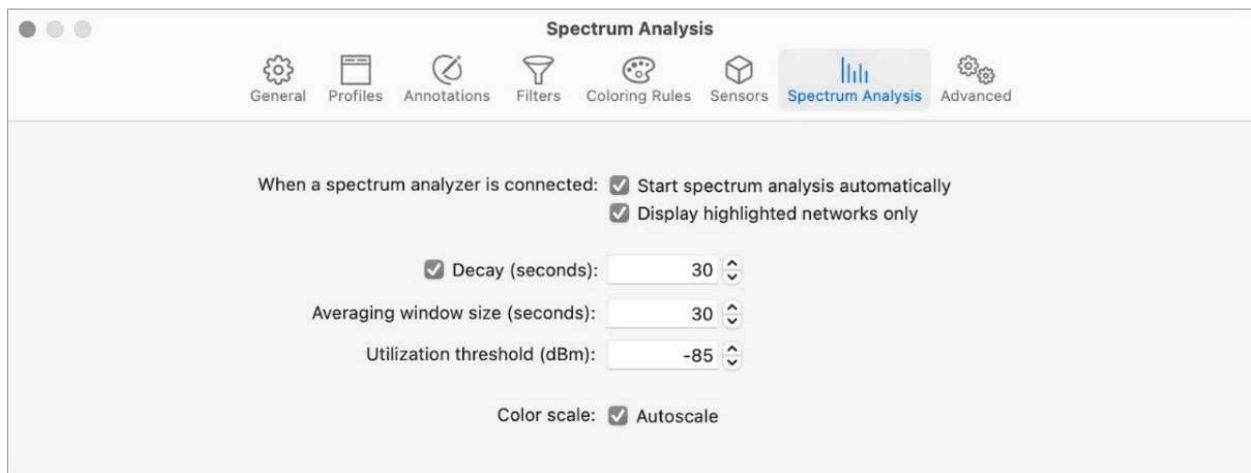


Figure 9-18 – The *Spectrum Analysis* settings tab

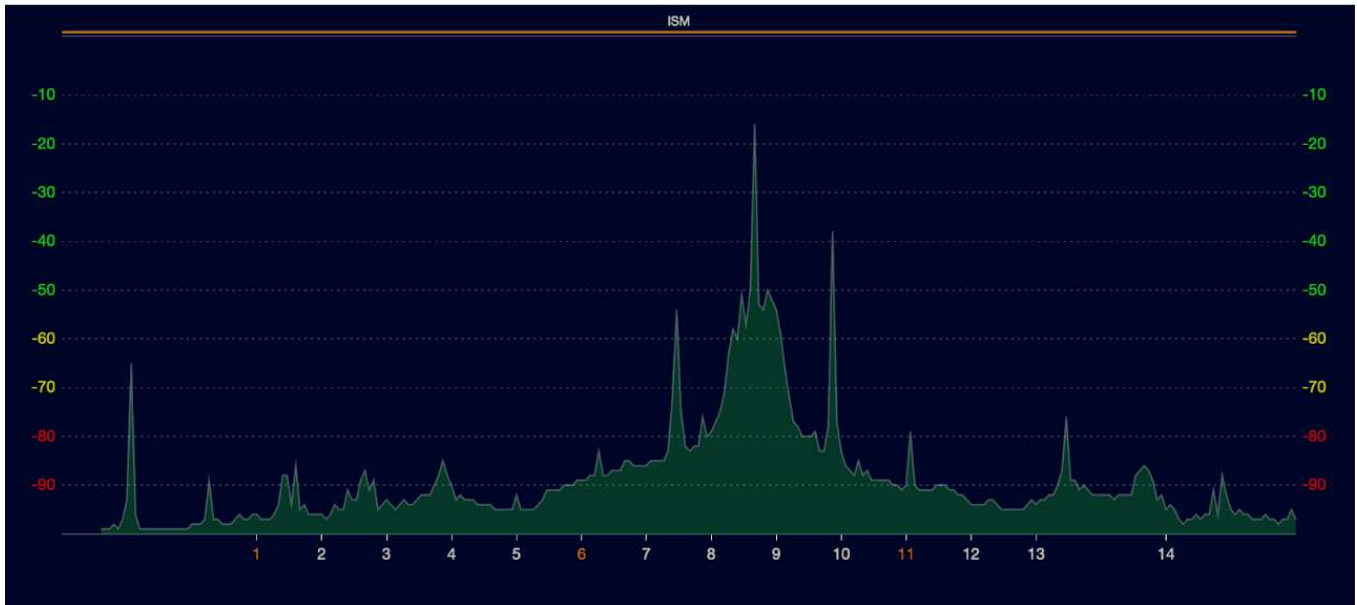


Figure 9-19 – Spectrum analysis Average Trace

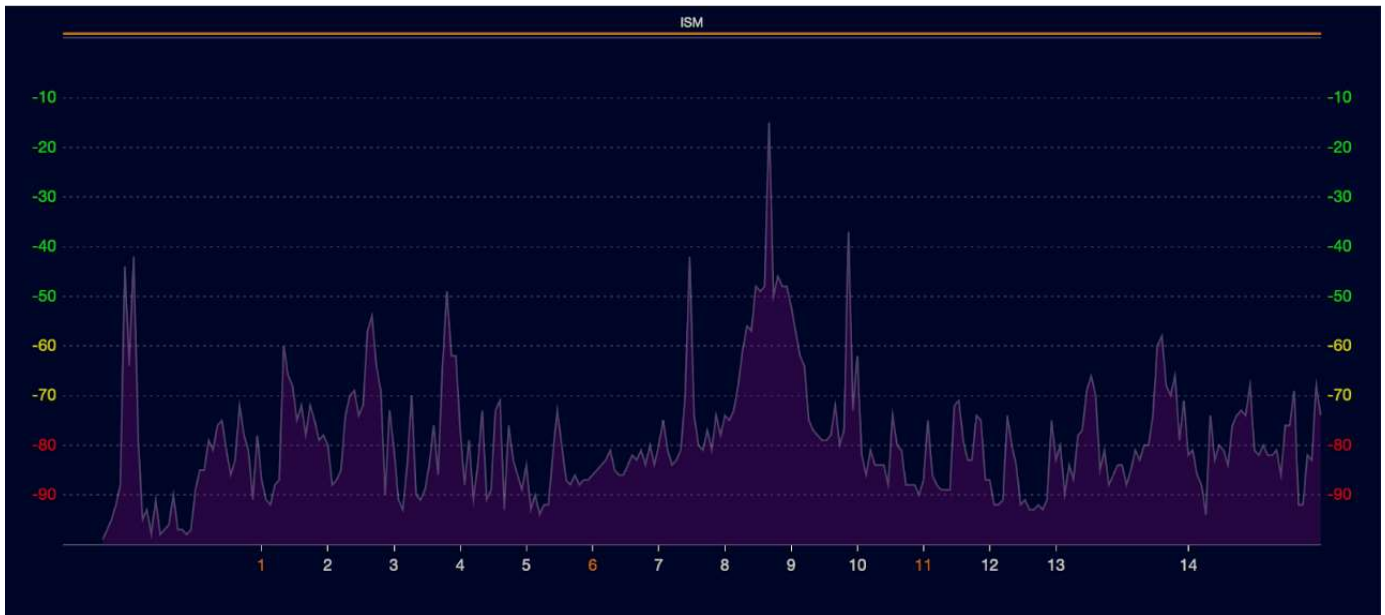


Figure 9-20 – Spectrum analysis Maximum Trace

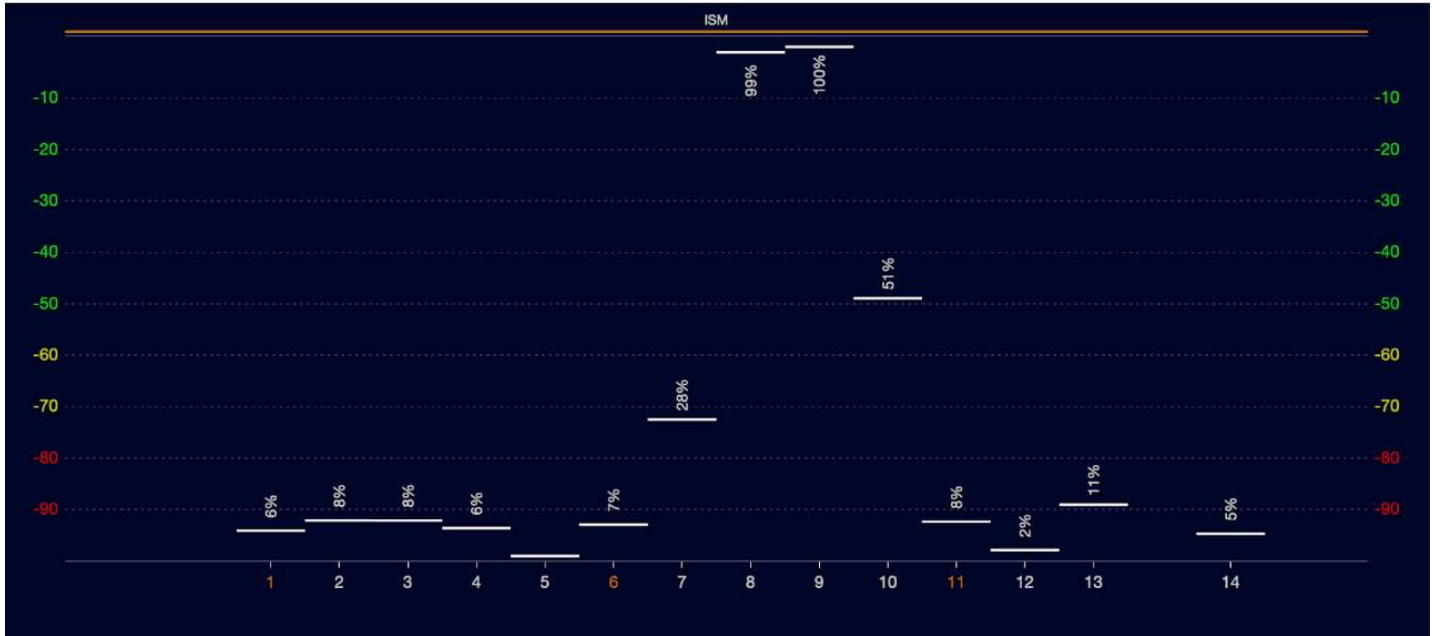


Figure 9-21 – Spectrum analysis Utilization Trace

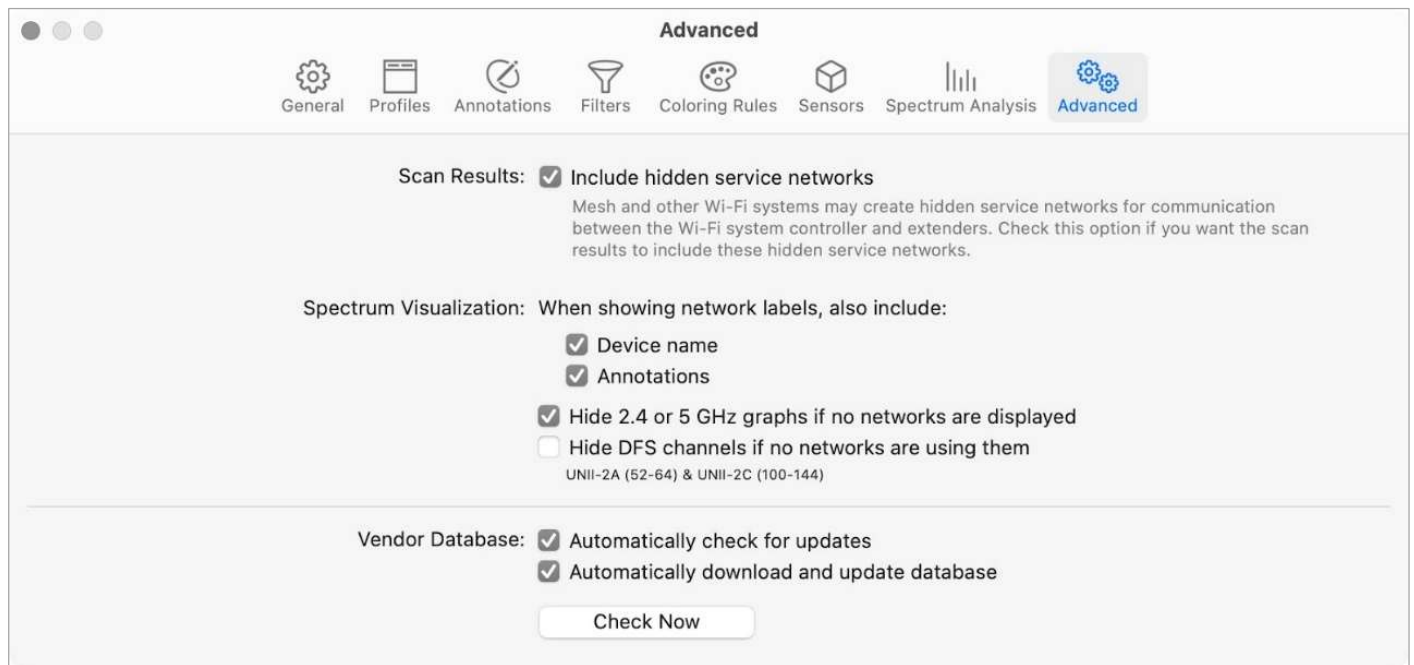


Figure 9-22 – The *Advanced* settings tab

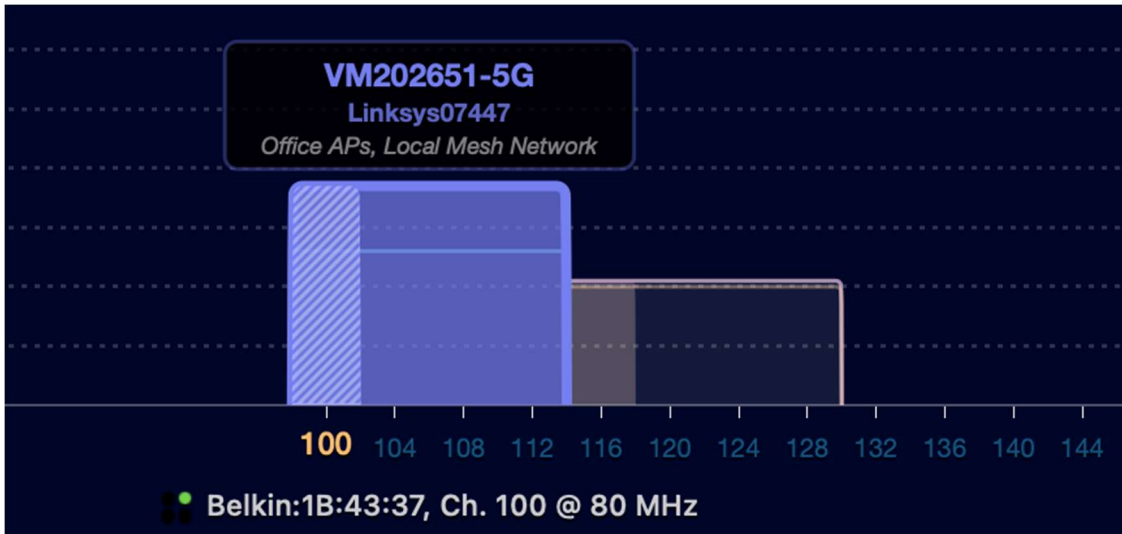


Figure 9-23 – Spectrum Visualization with device names & annotations enabled

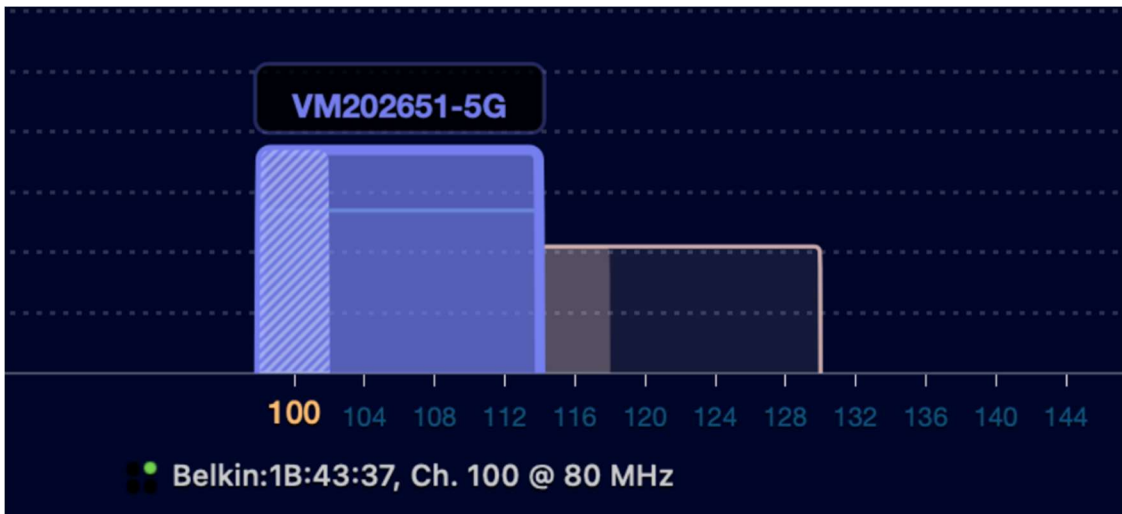


Figure 9-24 – Spectrum Visualization with device names & annotations disabled

BSSID	Vendor	Network Name
18:35:D1:B9:71:DF	ARRIS Group Inc.	VM6643873
18:35:D1:A9:9F:CF	ARRIS Group Inc.	VM0108420

Figure 9-25 – Networks table showing Arris Group Inc. devices



Figure 9-26 – Online lookup of the 18:35:D1 OUI details

# Chapter 10 – Data Visualization: Filter Expressions & Display Filters

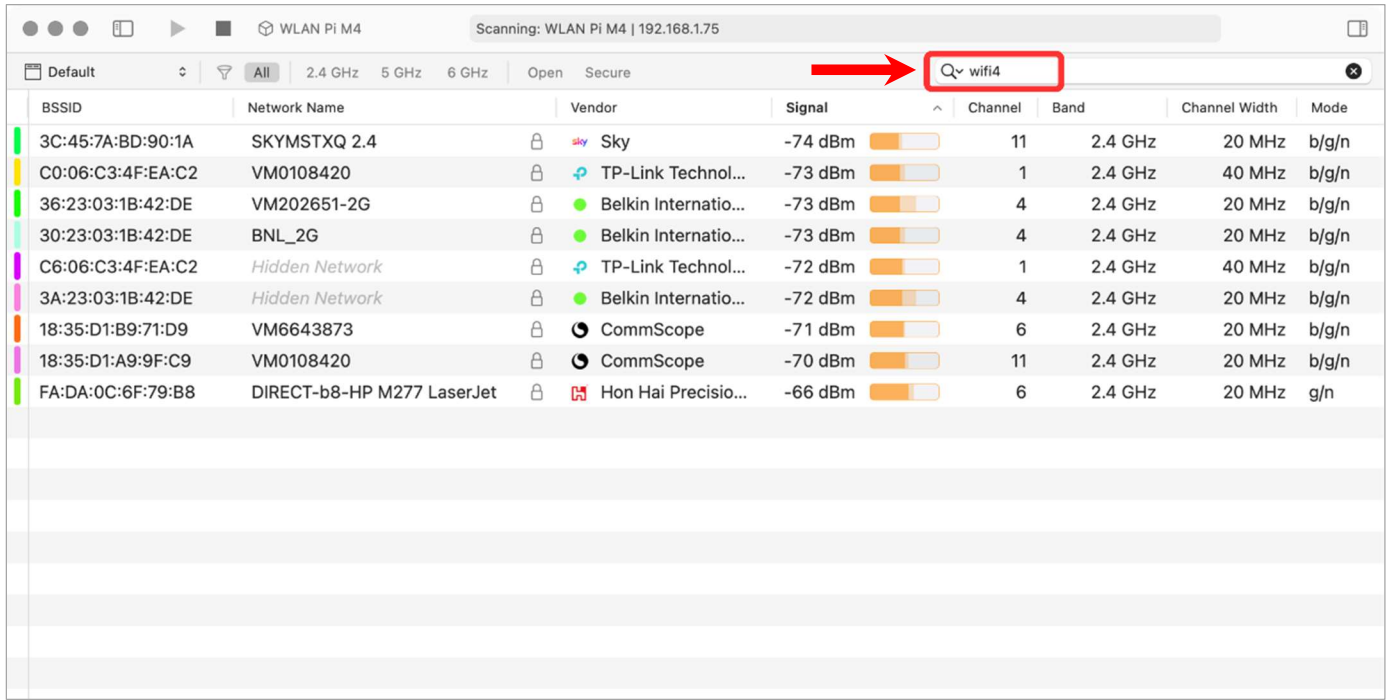


Figure 10-1 – Filtering with keywords

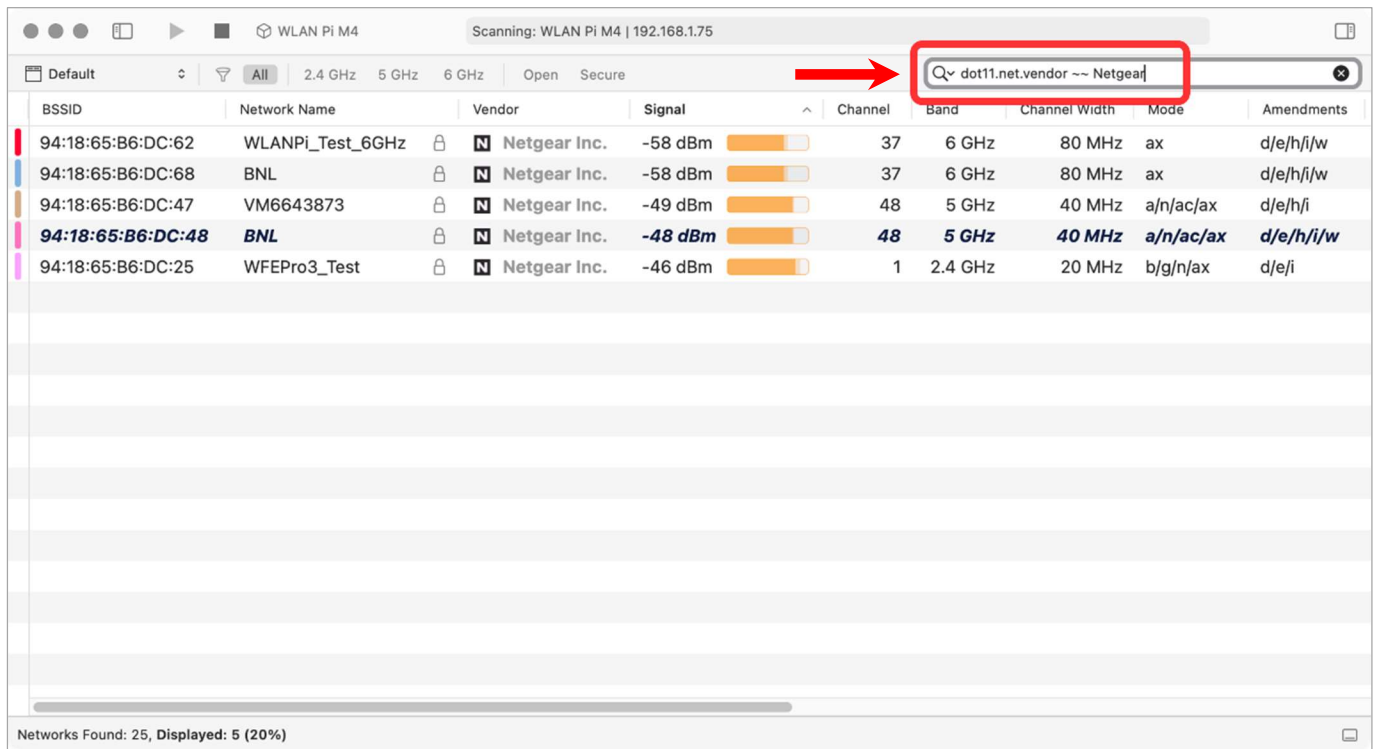


Figure 10-2 – Network attribute filter applied to the networks table



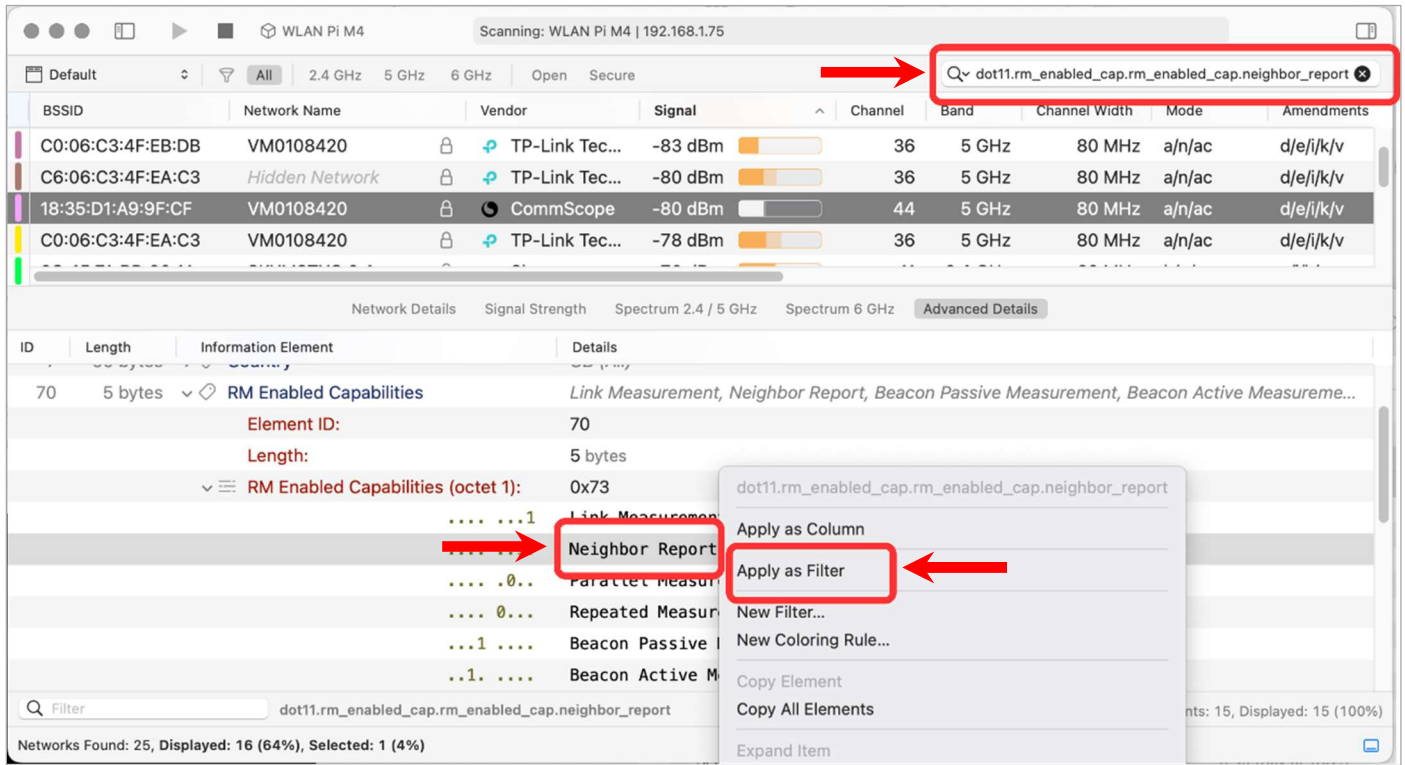


Figure 10-3 – Information element field filter applied to the networks table

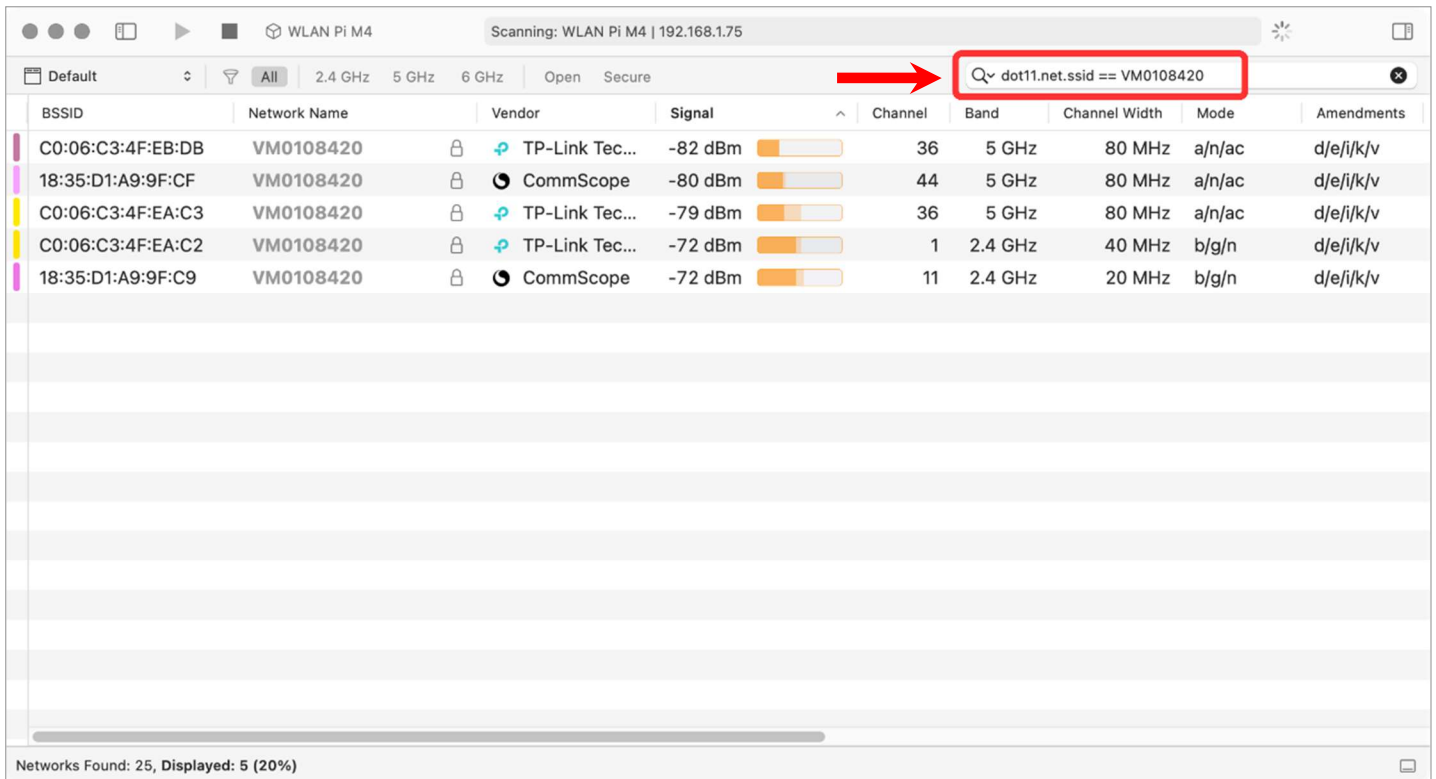


Figure 10-4 – Filtering using a comparison operator

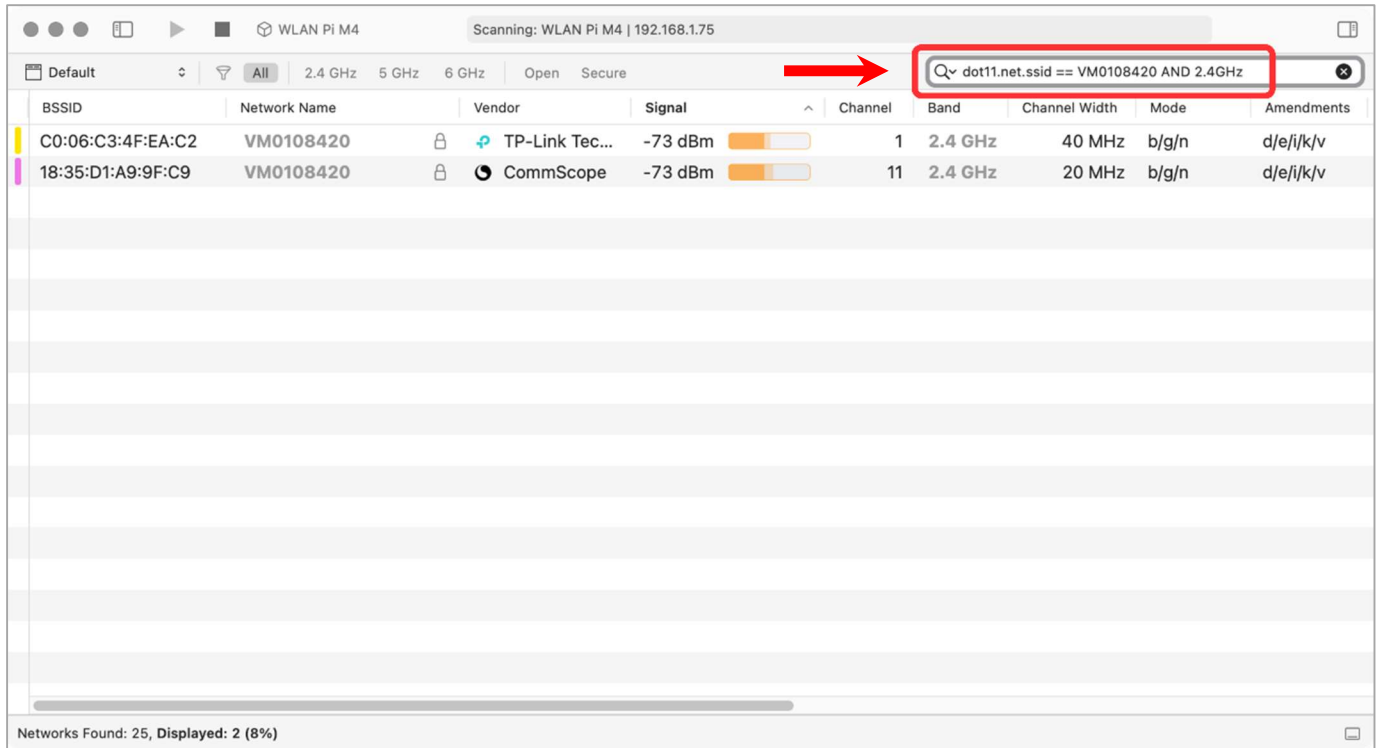


Figure 10-5 – Filtering example using multiple expressions

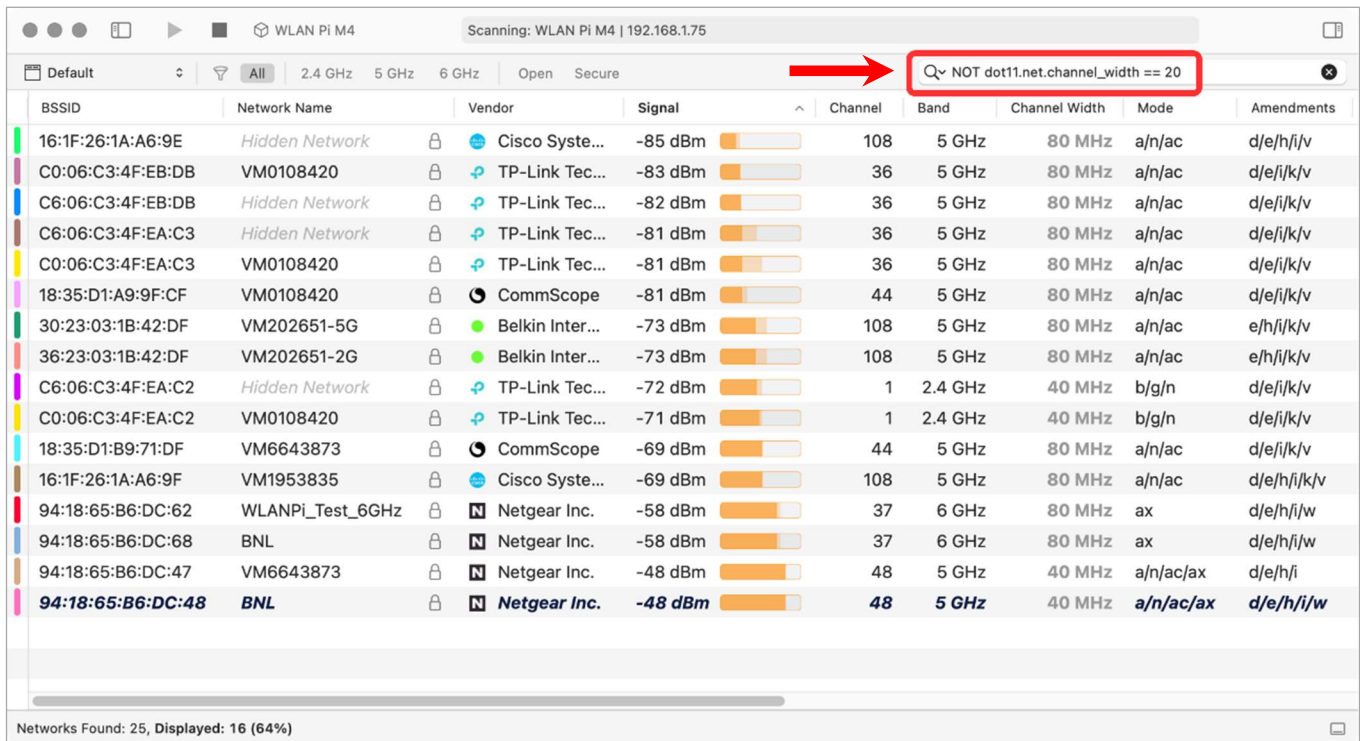


Figure 10-6 – Filtering using the negation operator

## WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

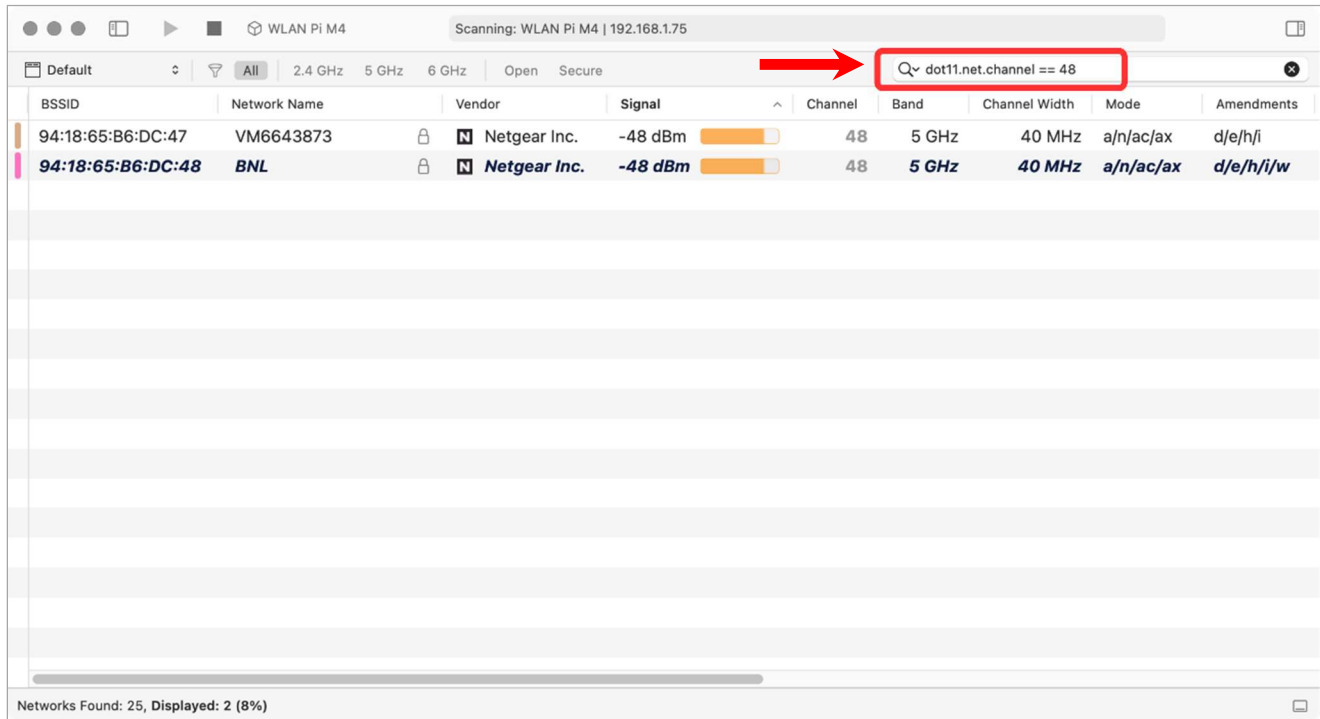


Figure 10-7 – Filter field location

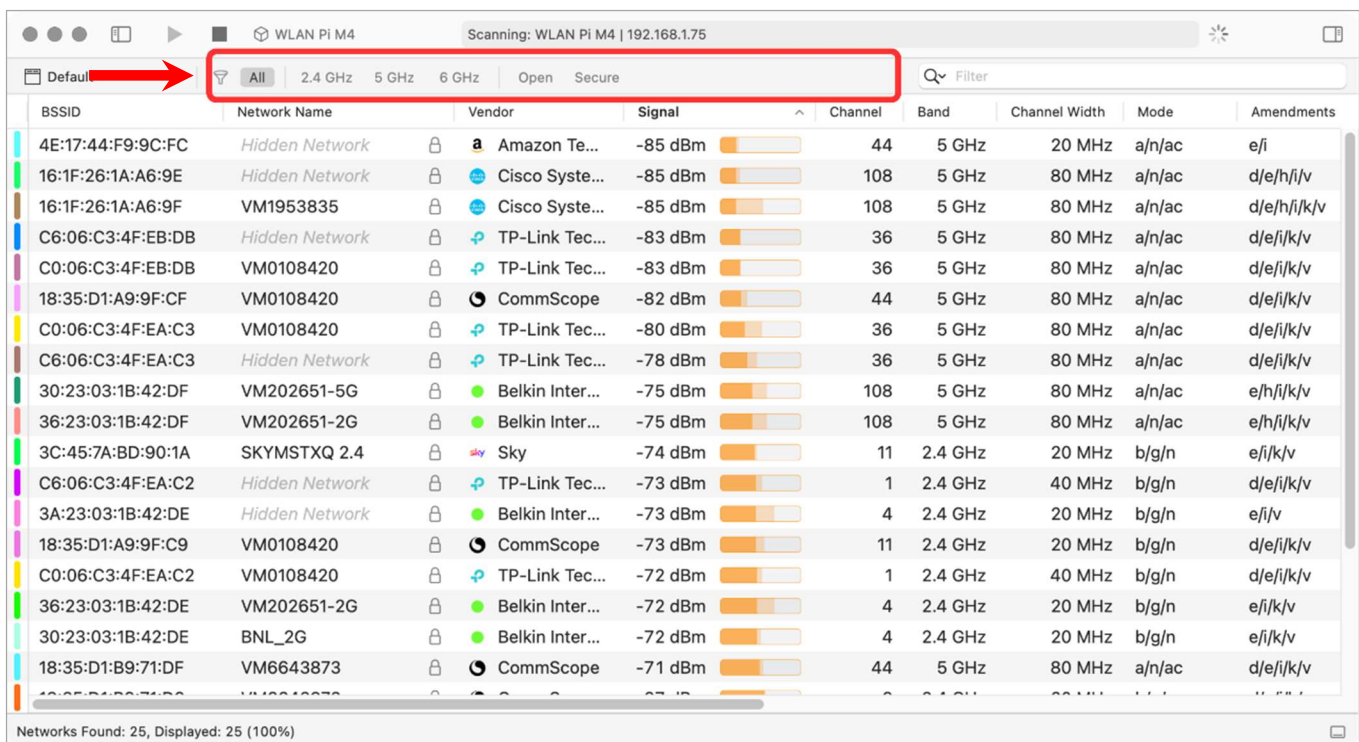


Figure 10-8 – Quick filter bar location

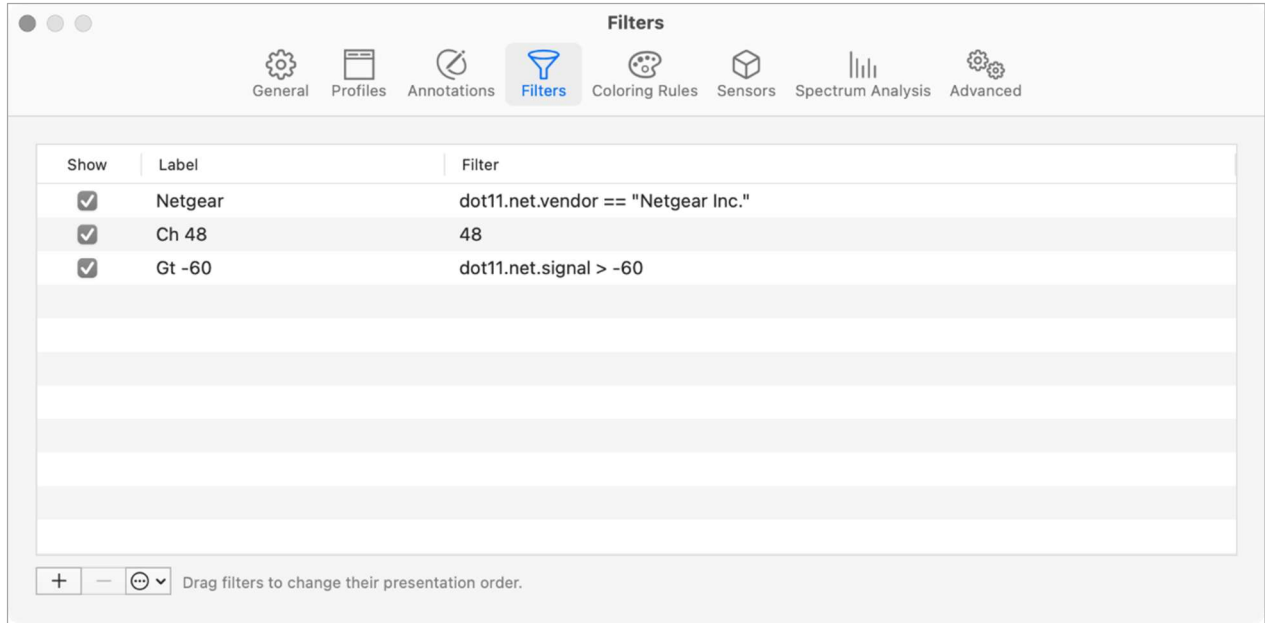


Figure 10-9 – The *Filters* settings tab

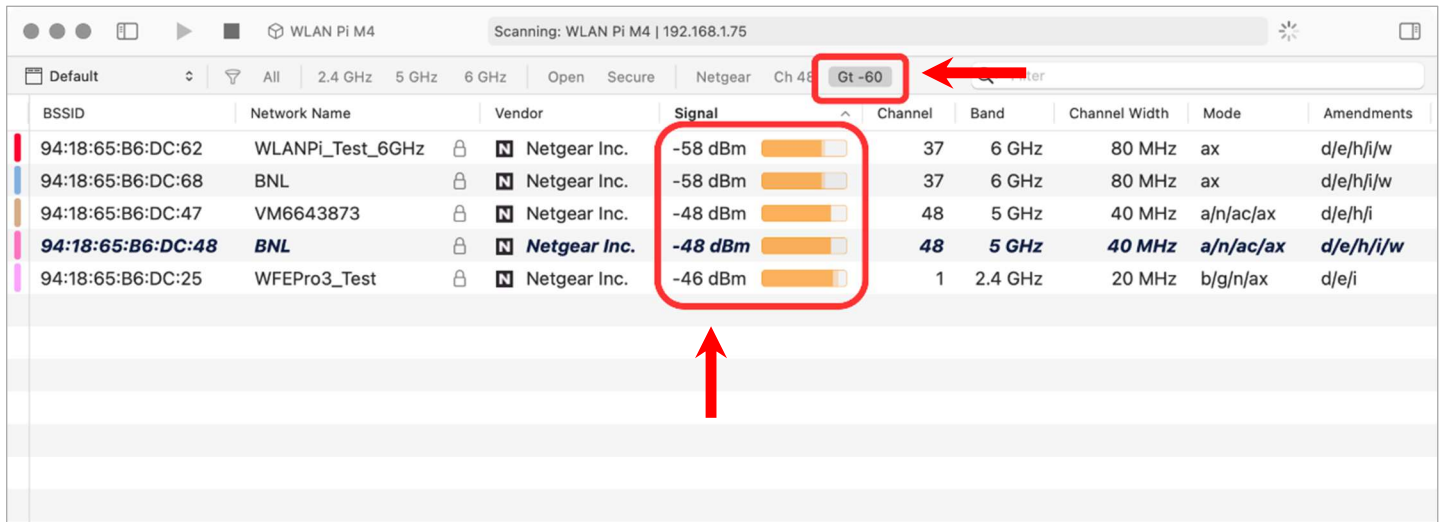


Figure 10-10 – Custom filters on the quick filter bar

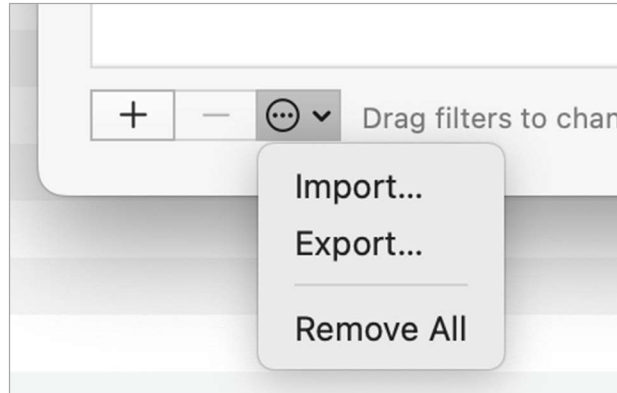


Figure 10-11 - The filters list *More* button options

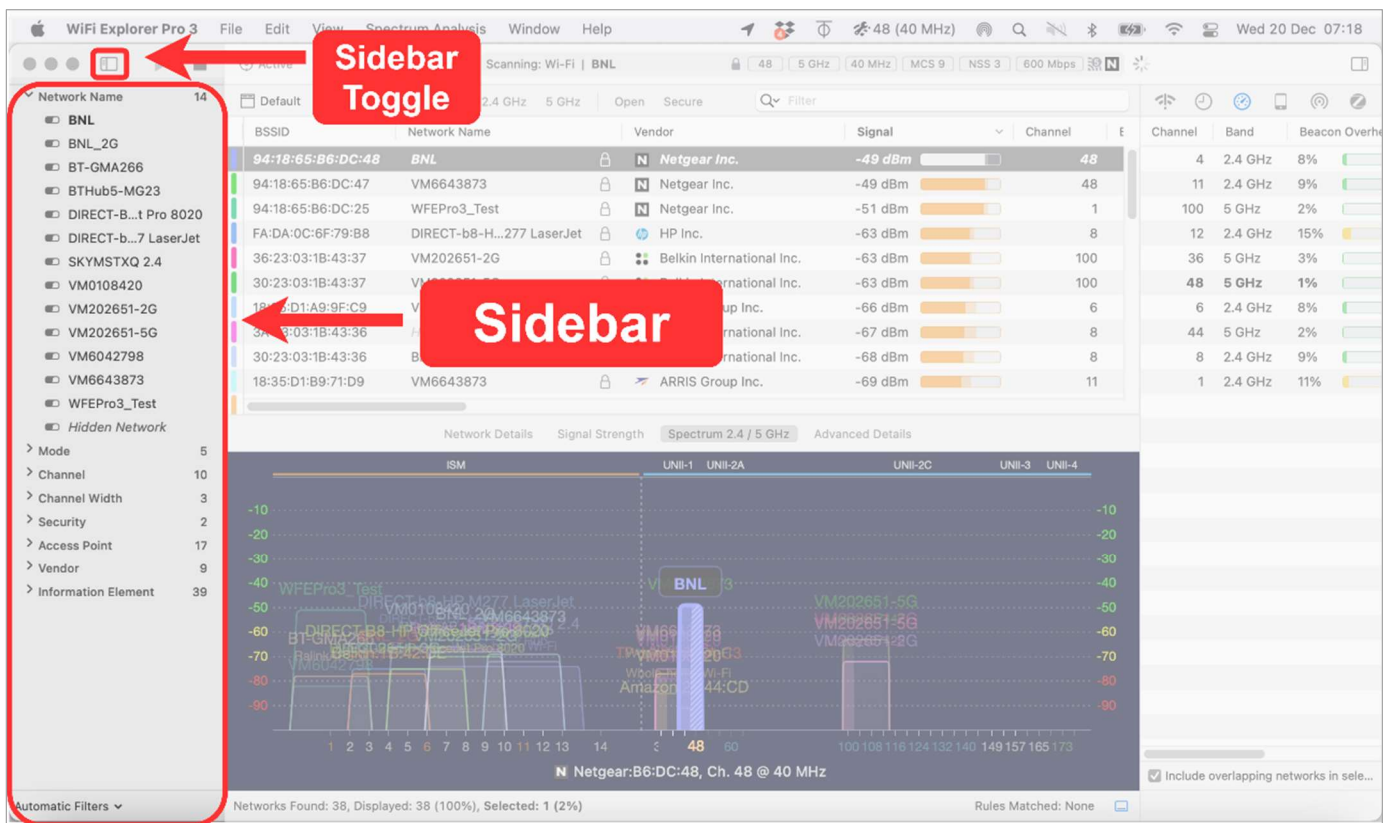


Figure 10-12 - *Sidebar* UI location

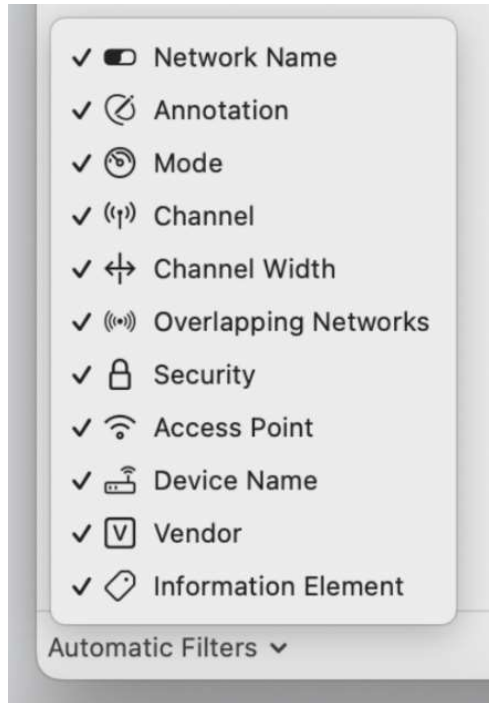


Figure 10-13 - Sidebar *Automatic Filter* options

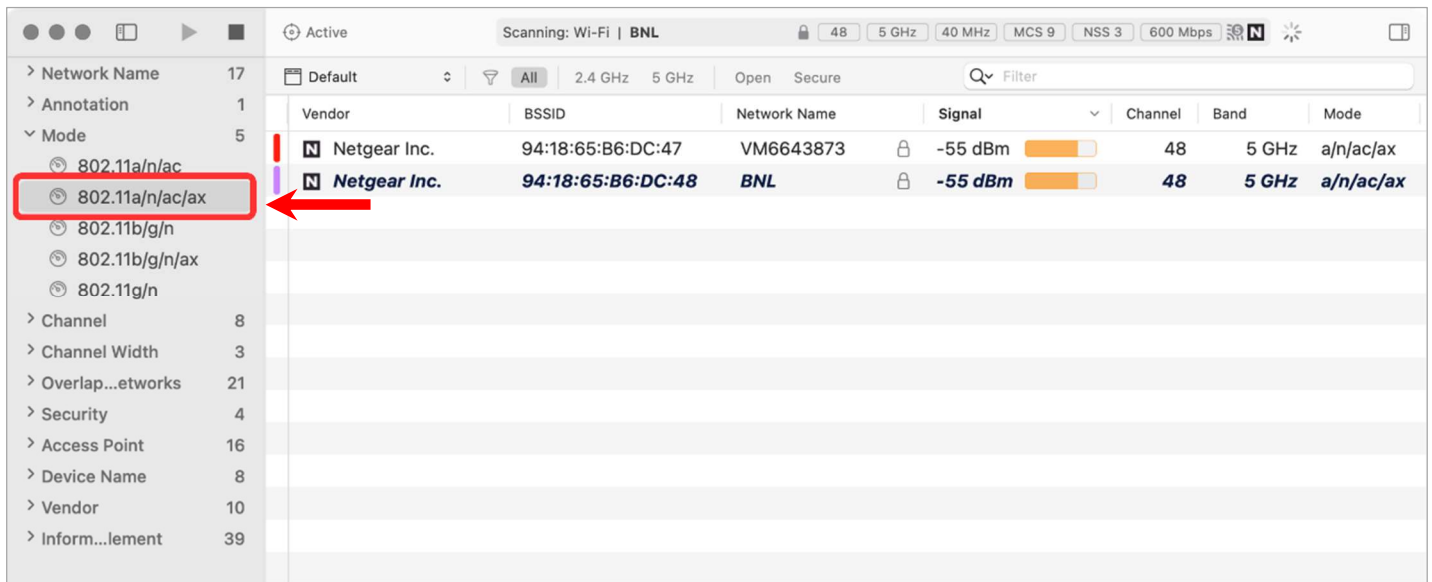


Figure 10-14 - Sidebar filter example using a *Mode* filter



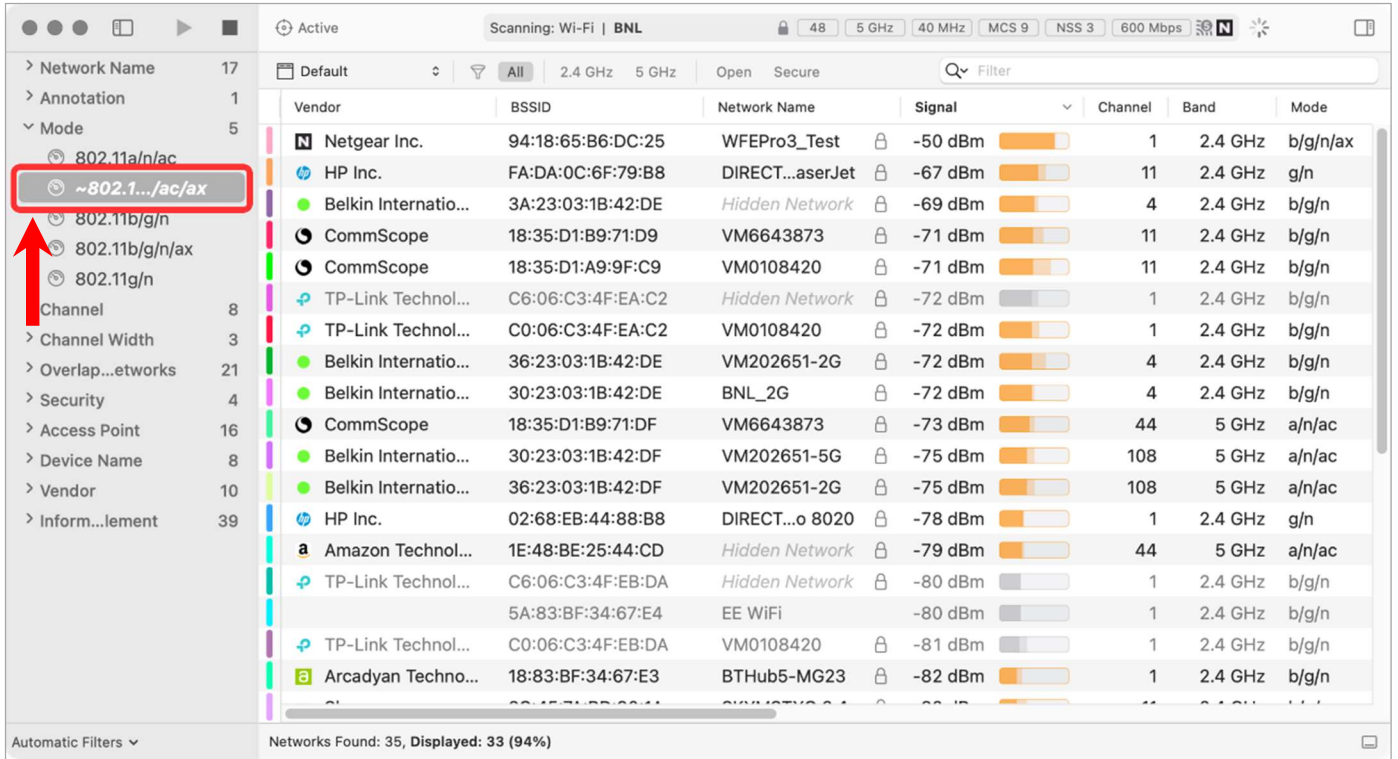


Figure 10-15 - Sidebar filter example using a negated Mode filter

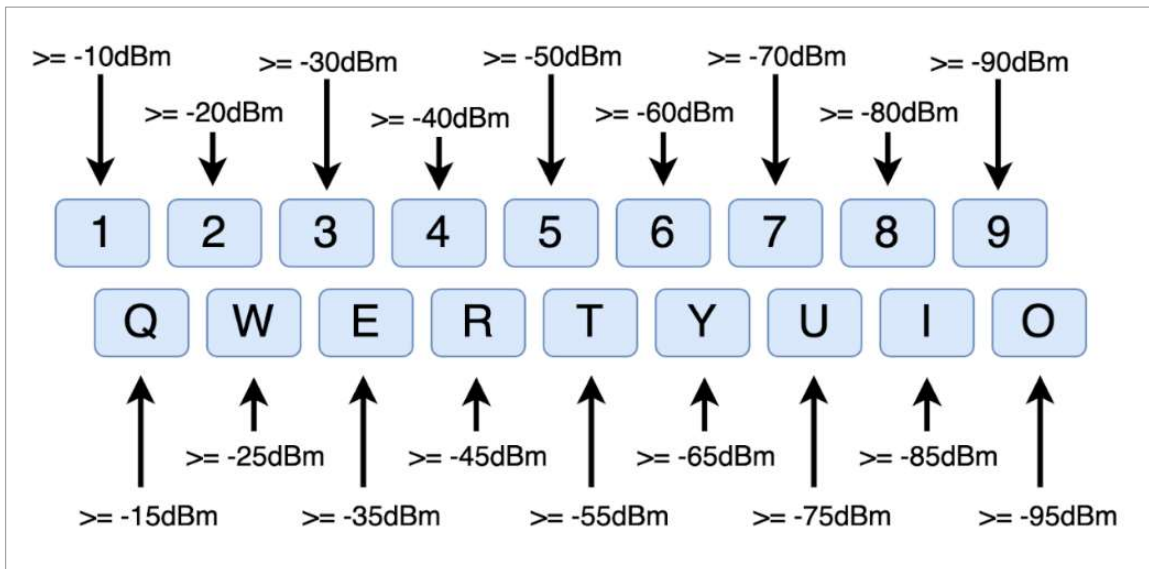


Figure 10-16 - Keyboard shortcut filters

BSSID	Network Name	Vendor	Signal	Channel	Band	Channel Width	Mode	Amendments
94:18:65:B6:DC:62	WLANPi_Test_6GHz	Netgear Inc.	-60 dBm	37	6 GHz	80 MHz	ax	d/e/h/f/j/w
94:18:65:B6:DC:68	BNL	Netgear Inc.	-60 dBm	37	6 GHz	80 MHz	ax	d/e/h/f/j/w
94:18:65:B6:DC:47	VM6643873	Netgear Inc.	-48 dBm	48	5 GHz	40 MHz	a/n/ac/ax	d/e/h/f/i
94:18:65:B6:DC:48	BNL	Netgear Inc.	-48 dBm	48	5 GHz	40 MHz	a/n/ac/ax	d/e/h/f/j/w
94:18:65:B6:DC:25	WFEP3_Test	Netgear Inc.	-47 dBm	1	2.4 GHz	20 MHz	b/g/n/ax	d/e/f/i

Networks Found: 25, Displayed: 5 (20%)

Showing only networks with signal strength >= -60 dBm

Figure 10-17 - Keyboard shortcut filter applied for -60 dBm (Ctrl-6)

### WiFi Explorer / WiFi Explorer Pro 3 Filters Cheat Sheet

**Filter by Keyword**

- Filter by network name (SSID), annotations, vendor, or device name:** Type any text. Use quotation marks for exact matching or names with spaces. Example: "ABC School", API23, guest, etc.
- Filter by BSSID:** Type one or more octets in the form :XX or XX:00, 00:11:35, :44:55, etc.
- Filter by band:** Type the band frequency in GHz. Example: 2.4ghz, 2ghz, 5ghz, etc.
- Filter by generation:** Type wifi4, wifi5, or wifi6.
- Filter by channel:** Type a channel number or range. Example: 1, 36, 7-10, etc.
- Filter by channel width:** Type the channel width in MHz. Units may be omitted. Example: 20, 20mhz, 40mhz, etc.
- Filter by signal strength (RSSI):** Type <, >, <=, or >= and the signal strength in dBm. Example: >= -65, <= -70, etc.
- Filter by network mode:** Type the letter(s) that identify the mode: a, b, g, n, ac, or ax. You may prefix it with 802.11, 80211 or 11. Example: ac, 802.11b, 80211g, 11n, etc.
- Filter by security or encryption type:** Type the acronym for the security or encryption type: open, secure, wep, wpa, wpa2, wpa3, sae, psk, owe, 802.1X.
- Filter by feature:** The identifier of the feature: wps (WPS), ft (BSS Fast Transition), dtpc\* (DTPC), hs\* (Hotspot 2.0).
- Filter by SSID visibility:** Type hidden to show hidden networks only.

**Combine or Negate Filters**

- Combine filters using the OR operator: 20mhz OR 40mhz
- Combine filters using the AND operator: 5ghz AND dot11.net.signal <= -72
- Negate a filter using the NOT operator: NOT 20mhz
- Group filter expressions using parentheses: (2.4ghz AND 40mhz) OR (5ghz AND 160mhz)
- Note: Logical operators are CASE SENSITIVE.

**Compare Values**

Use the following operators to compare values when filtering using network attributes or information element fields:

- = Equal: Numerical and text values
- != Not equal: Numerical and text values
- ~ Contains: Text values
- !~ Does not contain: Text values
- > Greater than: Numerical values
- >= Greater or equal than: Numerical values
- < Less than: Numerical values
- <= Less or equal than: Numerical values

Note: If the value you're using for filtering contains spaces, use quotation marks. E.g., for showing networks named "Guest Network" only, use dot11.net.ssid == "Guest Network".

\* This filter or feature is only available in WiFi Explorer Pro 3.

**Filter by Network Attribute**

You can filter networks by specific attributes. These attributes map to the Network Information Element (NIE) fields and are identified with the prefix dot11.net. Use the auto-complete function in the Filter field, or select a network from the list.

**Filter by Network Attribute (cont.)**

- dot11.net.amendments\*
- dot11.net.annotations
- dot11.net.band
- dot11.net.basic\_rates
- dot11.net.beacon\_airtime\*
- dot11.net.beacon\_interval
- dot11.net.beacon\_mode\*
- dot11.net.beacon\_rate\*
- dot11.net.bssid
- dot11.net.center\_freq
- dot11.net.channel
- dot11.net.channel\_util
- dot11.net.channel\_width
- dot11.net.clients\*
- dot11.net.country\_code\*
- dot11.net.device\_name
- dot11.net.fast\_transition
- dot11.net.generation
- dot11.net.ie\_count\*
- dot11.net.ie\_total\_length\*
- dot11.net.ie\_length > 300
- dot11.net.max\_basic\_rate\* Maximum supported basic rate (Mbps)
- dot11.net.min\_basic\_rate >= 54, dot11.net.max\_basic\_rate <= 24 (Mbps)
- dot11.net.min\_rate >= 800 (bps)
- dot11.net.min\_basic\_rate >= 24 (bps)
- dot11.net.min\_rate <= 5.5 (kb)
- dot11.net.mode == ax
- dot11.net.name == "Non-11t M1500", "None"
- dot11.net.security == DWE
- dot11.net.ssid == guest
- dot11.net.stations > 10
- dot11.net.stations == 3 (k or infrastructural)
- dot11.net.type == mesh, tv
- dot11.net.vendor == Aruba
- dot11.net.wide\_channel == 166

**Filter by Information Element Field**

You can filter networks by specific information element fields\*. The prefix dot11.net identifies more than 800 fields (except for the prefix dot11.net, which identifies network attributes). Use the auto-complete function in the Filter field, or select a network from the list.

Go to Advanced Details > Right-click over a field or subfield > Choose Apply as Filter

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Figure 10-18 – Filters cheat sheet available from www.intuitibits.com

# Chapter 11 - Data Visualization: Columns & Profiles

BSSID	Network Name	Vendor	Signal	Channel	Band	Channel Width	Mode	Amendments
94:18:65:B6:DC:25	WFEPPro3_Test	Netgear Inc.	-51 dBm	1	2.4 GHz	20 MHz	b/g/n/ax	d/e/fi
94:18:65:B6:DC:47	VM6643873	Netgear Inc.	-55 dBm	48	5 GHz	40 MHz	a/n/ac/ax	d/e/h/fi
<b>94:18:65:B6:DC:48</b>	<b>BNL</b>	<b>Netgear Inc.</b>	<b>-55 dBm</b>	<b>48</b>	<b>5 GHz</b>	<b>40 MHz</b>	<b>a/n/ac/ax</b>	<b>d/e/h/fi/v...</b>
18:35:D1:A9:9F:C9	VM0108420	CommScope	-67 dBm	11	2.4 GHz	20 MHz	b/g/n	d/e/fi/k/v
18:35:D1:B9:71:D9	VM6643873	CommScope	-68 dBm	6	2.4 GHz	20 MHz	b/g/n	d/e/fi/k/v
C0:06:C3:4F:EA:C2	VM0108420	TP-Link Tec...	-69 dBm	1	2.4 GHz	40 MHz	b/g/n	d/e/fi/k/v
FA:DA:0C:6F:79:B8	DIRECT-b...7 LaserJet	Hon Hai Pre...	-71 dBm	6	2.4 GHz	20 MHz	g/n	e/h/fi
3A:23:03:1B:42:DE	Hidden Network	Belkin Inter...	-73 dBm	4	2.4 GHz	20 MHz	b/g/n	e/fi/v
30:23:03:1B:42:DF	VM202651-5G	Belkin Inter...	-74 dBm	108	5 GHz	80 MHz	a/n/ac	e/h/fi/k/v
36:23:03:1B:42:DF	VM202651-2G	Belkin Inter...	-74 dBm	108	5 GHz	80 MHz	a/n/ac	e/h/fi/k/v
36:23:03:1B:42:DE	VM202651-2G	Belkin Inter...	-75 dBm	4	2.4 GHz	20 MHz	b/g/n	e/fi/k/v
18:35:D1:B9:71:DF	VM6643873	CommScope	-75 dBm	44	5 GHz	80 MHz	a/n/ac	d/e/fi/k/v
30:23:03:1B:42:DE	BNL_2G	Belkin Inter...	-76 dBm	4	2.4 GHz	20 MHz	b/g/n	e/fi/k/v
C0:06:C3:4F:EB:DA	VM0108420	TP-Link Tec...	-78 dBm	1	2.4 GHz	40 MHz	b/g/n	d/e/fi/k/v
3C:45:7A:BD:90:1A	SKYMSTXQ 2.4	Sky	-79 dBm	11	2.4 GHz	20 MHz	b/g/n	e/fi/k/v
C6:06:C3:4F:EA:C3	Hidden Network	TP-Link Tec...	-80 dBm	36	5 GHz	80 MHz	a/n/ac	d/e/fi/k/v
C0:06:C3:4F:EA:C3	VM0108420	TP-Link Tec...	-80 dBm	36	5 GHz	80 MHz	a/n/ac	d/e/fi/k/v
18:35:D1:A9:9F:CF	VM0108420	CommScope	-85 dBm	44	5 GHz	80 MHz	a/n/ac	d/e/fi/k/v

Networks Found: 19, Displayed: 19 (100%)

Figure 11-1 - Typical WLAN scan data listing

- Auto Size Column
- Auto Size All Columns

---

- Show Text Only All Columns

---

- Pin Column

---

- Hide Column
- Rename Column

---

- Advertisement Protocol ID
- Amendments
- Annotations
- Auth Key Management Suite Type
- BSSID
- Band
- Basic Rates
- Beacon Airtime
- Beacon Interval

Figure 11-2 - Columns menu (accessed by Control-clicking any column header)

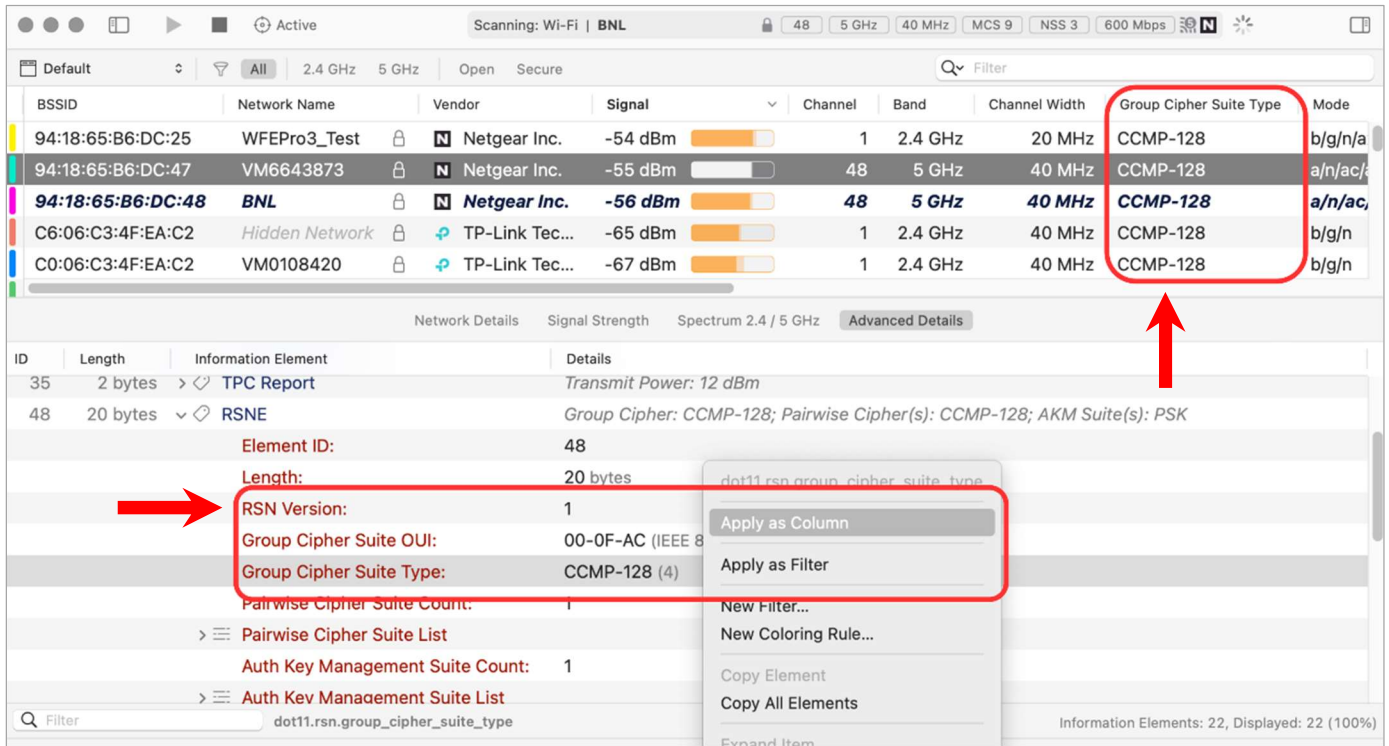


Figure 11-3 - Custom column addition

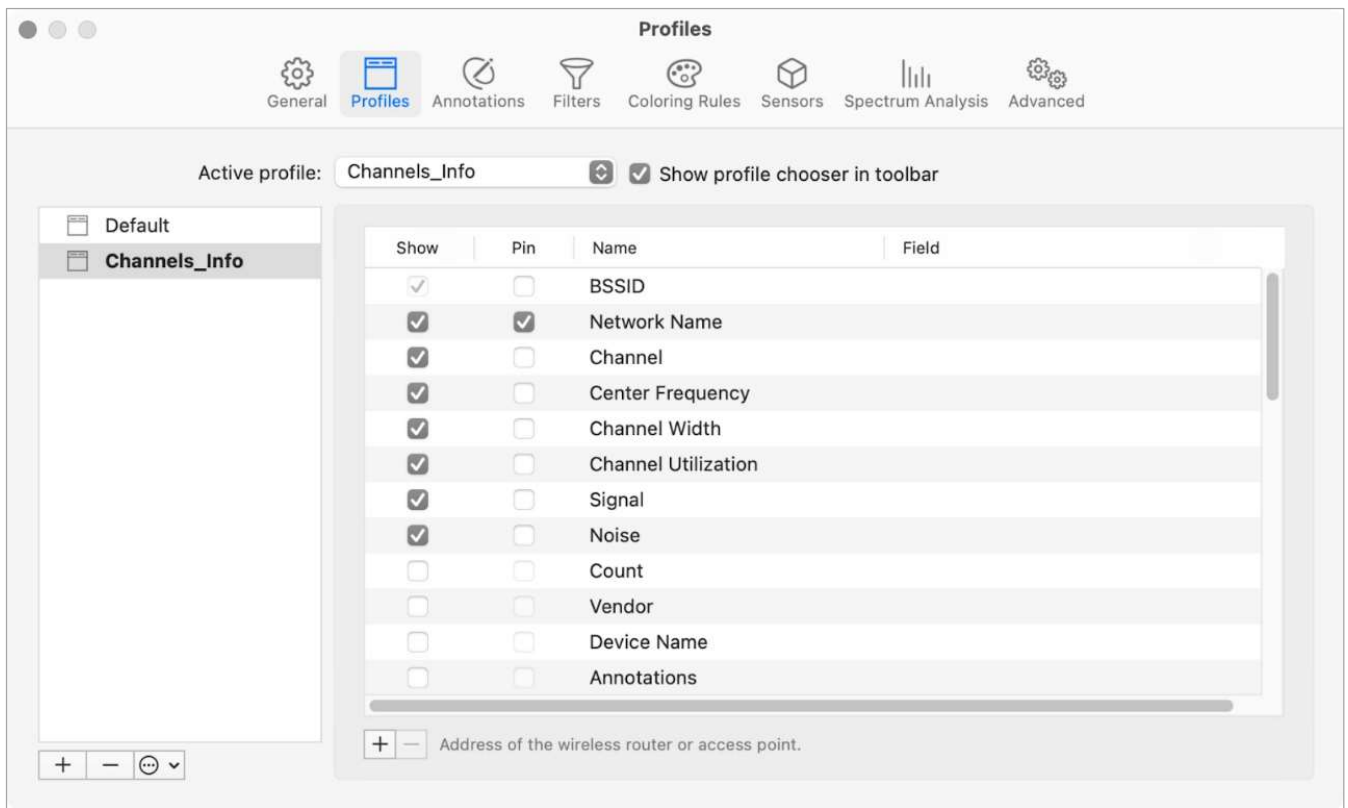


Figure 11-4 – The Profiles settings tab showing a custom profile



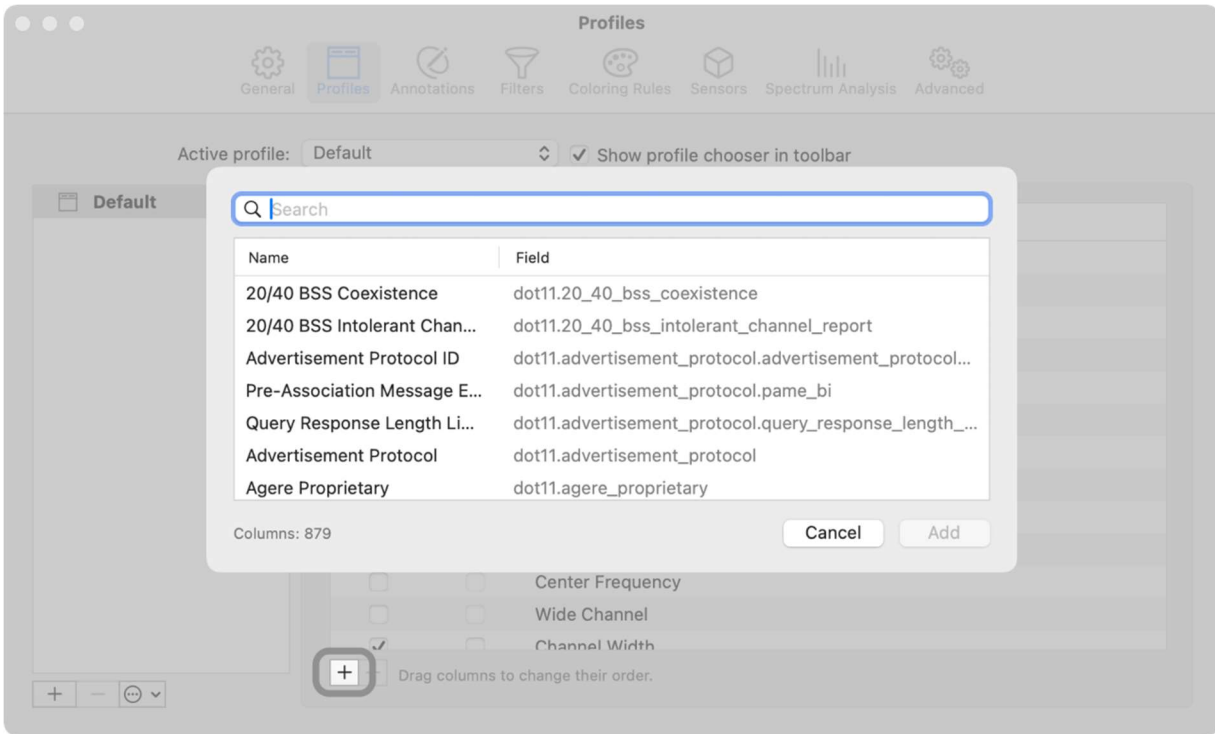


Figure 11-5 - Adding new columns to a profile

Network Name	BSSID	Channel	Center Frequency	Channel Width	Channel Utilization	Signal	Noise
BNL	94:18:65:B6:DC:48	48	5240 MHz	40 MHz		-49 dBm	-96 dBm
VM6643873	94:18:65:B6:DC:47	48	5240 MHz	40 MHz		-49 dBm	-96 dBm
VM202651-2G	36:23:03:1B:43:37	100	5500 MHz	80 MHz		-69 dBm	-92 dBm
<b>VM202651-5G</b>	<b>30:23:03:1B:43:37</b>	<b>100</b>	<b>5500 MHz</b>	<b>80 MHz</b>		<b>-69 dBm</b>	<b>-92 dBm</b>
VM202651-2G	36:23:03:1B:42:DF	100	5500 MHz	80 MHz		-72 dBm	-92 dBm
VM202651-5G	30:23:03:1B:42:DF	100	5500 MHz	80 MHz		-73 dBm	-92 dBm
Hidden Network	C6:06:C3:4F:EA:C3	36	5180 MHz	80 MHz		-78 dBm	-96 dBm
VM6643873	18:35:D1:B9:71:DF	44	5220 MHz	80 MHz		-79 dBm	-96 dBm
VM0108420	C0:06:C3:4F:EA:C3	36	5180 MHz	80 MHz		-81 dBm	-96 dBm
Hidden Network	4E:17:44:F9:9C:FC	44	5220 MHz	20 MHz		-85 dBm	-96 dBm
VM0108420	18:35:D1:A9:9F:CF	44	5220 MHz	80 MHz		-86 dBm	-96 dBm
Hidden Network	1E:48:BE:25:44:CD	44	5220 MHz	20 MHz		-86 dBm	-96 dBm
Hidden Network	C6:06:C3:4F:EB:DB	36	5180 MHz	80 MHz		-89 dBm	-96 dBm
VM0108420	C0:06:C3:4F:EB:DB	36	5180 MHz	80 MHz		-90 dBm	-96 dBm

Figure 11-6 - Networks Area with "Channels\_Info" profile applied

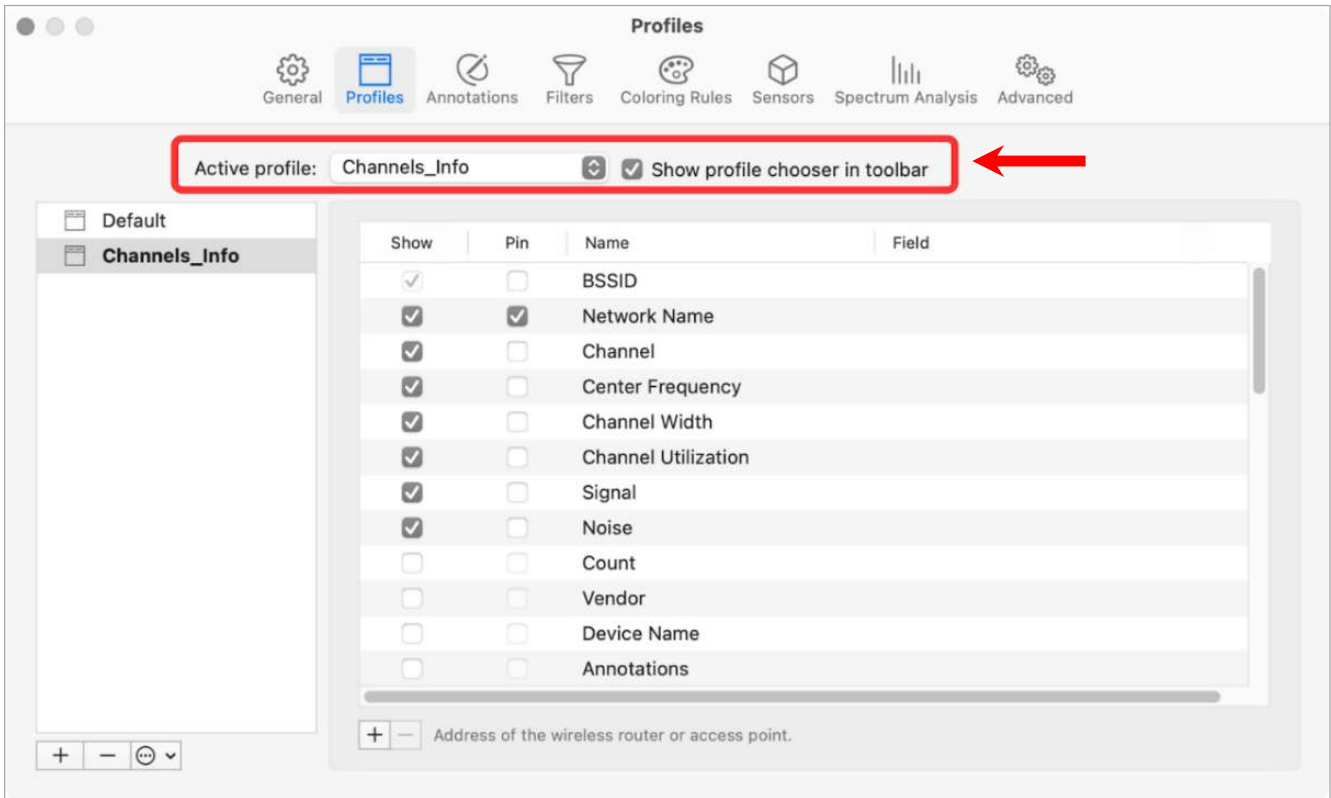


Figure 11-7 - Active profile selector in Settings

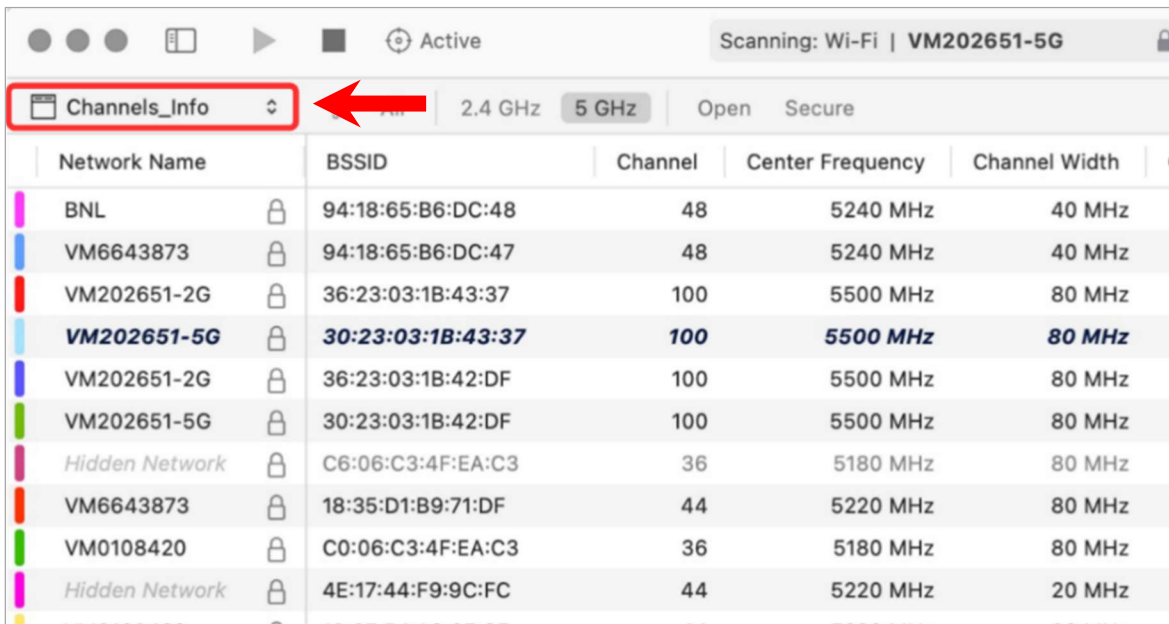


Figure 11-8 - Profile chooser location



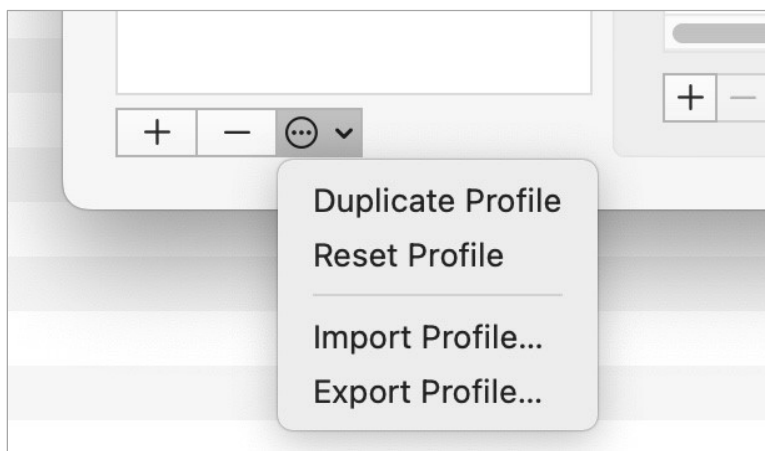


Figure 11-9 - The profiles list *More* button options

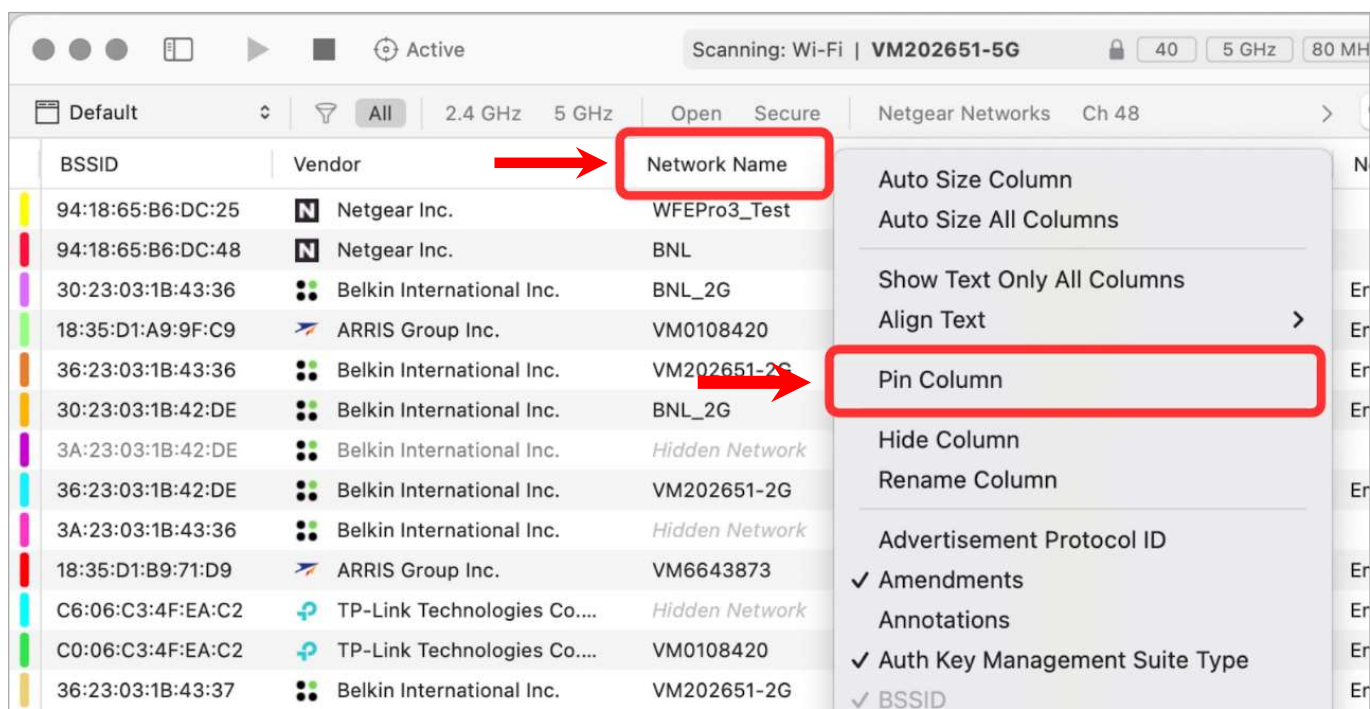


Figure 11-10 - Pinning a column using a column header

# Chapter 12 - Data Visualization: Scan Results Organization, Coloring Rules, Data Enhancements & Hidden Gems

Network Name	Count	BSSID	Vendor	Signal	Channel	Band	Channel Width	Mode	Amendments
ASMOBD	12	<Multiple Values>	Cisco Meraki	-54 dBm	1, 6, 11...	2.4, 5...	20, 80 MHz	a/b/g/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:98:BF:F4:FA	Cisco Meraki	-66 dBm	40	5 GHz	20 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:98:BF:F4:F9	Cisco Meraki	-90 dBm	48	5 GHz	20 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:98:BF:F4:E1	Cisco Meraki	-61 dBm	40	5 GHz	20 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:98:BF:F2:22	Cisco Meraki	-54 dBm	44	5 GHz	20 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:98:BF:F1:33	Cisco Meraki	-68 dBm	36	5 GHz	20 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		96:18:88:BF:F4:FA	Cisco Meraki	-67 dBm	1	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASMOBD		96:18:88:BF:F4:F9	Cisco Meraki	-89 dBm	11	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASMOBD		96:18:88:BF:F4:E1	Cisco Meraki	-60 dBm	6	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASMOBD		96:18:88:BF:F2:22	Cisco Meraki	-62 dBm	11	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASMOBD		96:18:88:BF:F1:33	Cisco Meraki	-73 dBm	6	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASMOBD		22:3F:1B:ED:F1:30	Cisco Meraki	-90 dBm	140	5 GHz	80 MHz	a/n/ac/ax	d/e/h/i/j/k/v
ASMOBD		22:3F:0B:ED:F1:30	Cisco Meraki	-88 dBm	1	2.4 GHz	20 MHz	b/g/n/ax	d/e/h/i/j/k/v
ASCORP	11	<Multiple Values>	Cisco Meraki	-54 dBm	1, 6, 11...	2.4, 5...	20, 80 MHz	a/b/g/n/ac/ax	d/e/h/i/j/k/v

Networks Found: 23, Displayed: 23 (100%), Highlighted: 12 (52%)

Figure 12-1 - Networks organized by name

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

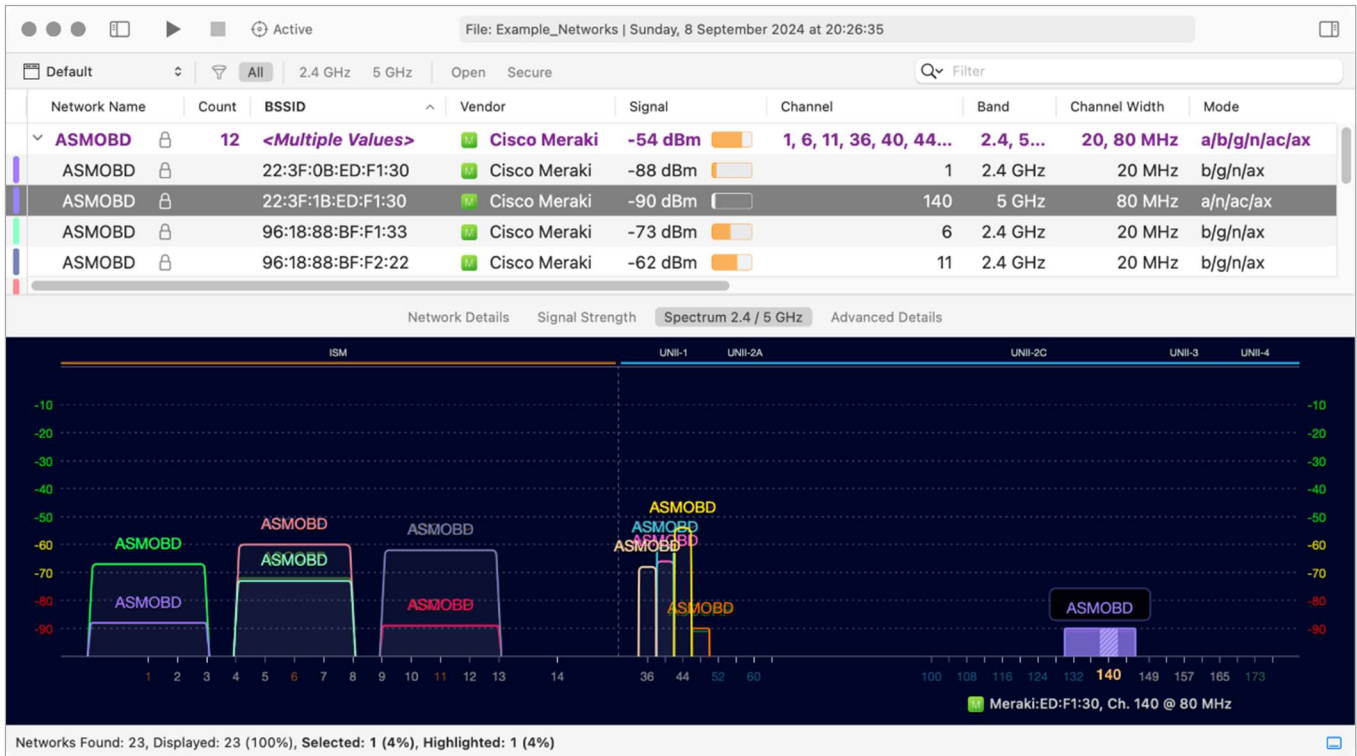


Figure 12-2 - Networks organized by name spectrum view

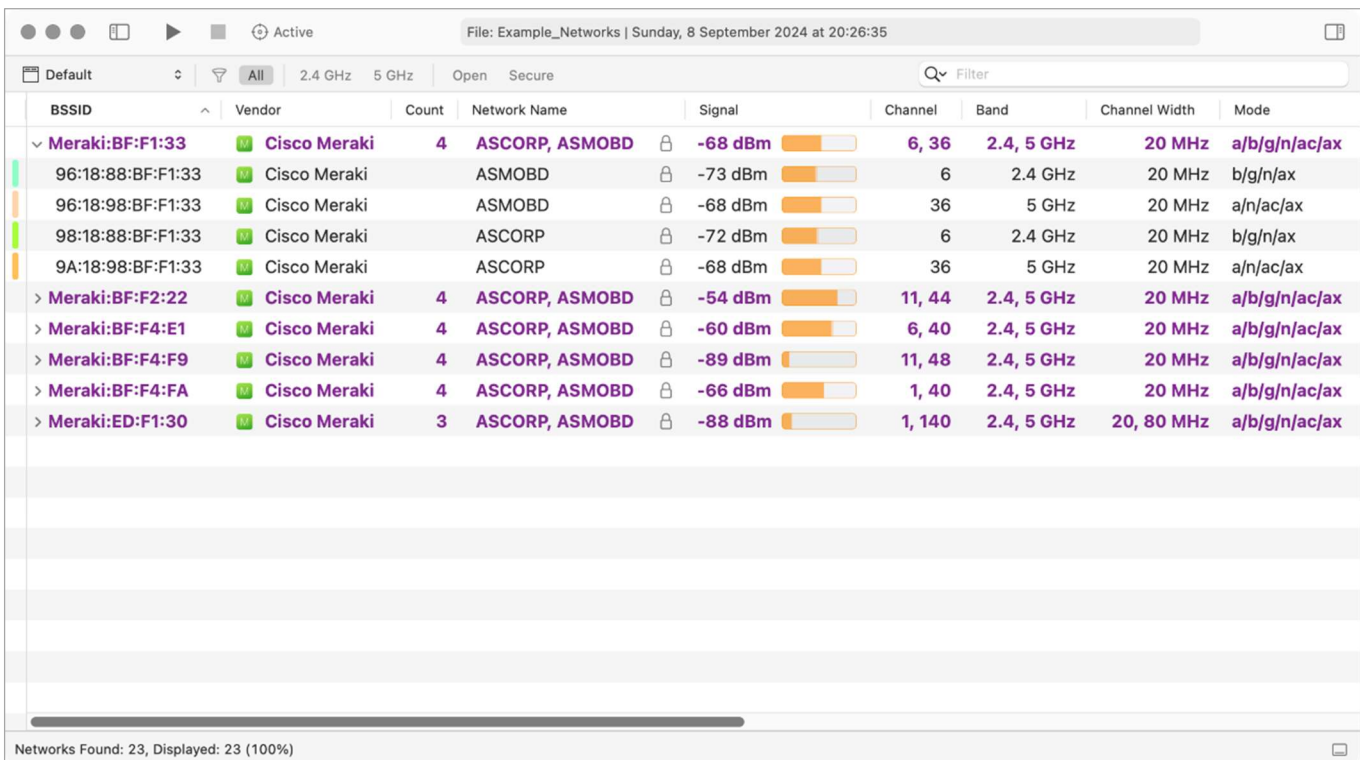


Figure 12-3 - Networks organized by access point

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

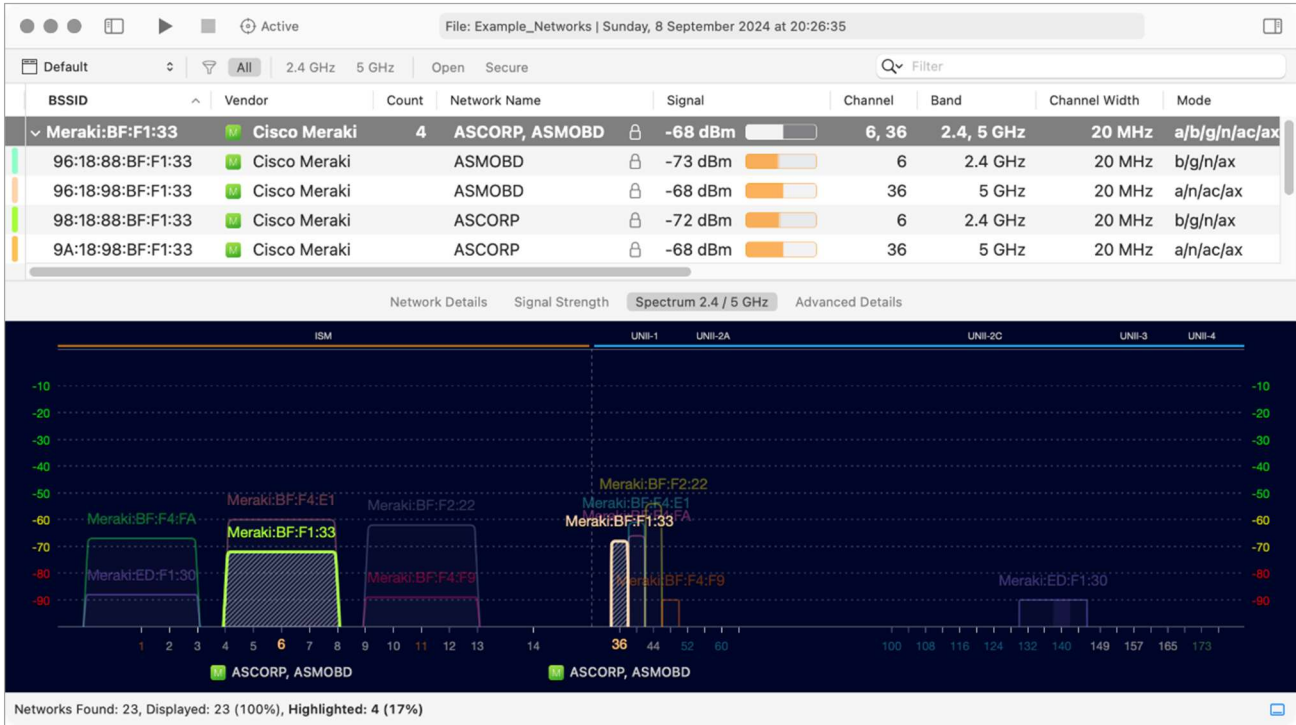


Figure 12-4 - Networks organized by access point spectrum view with a group selected

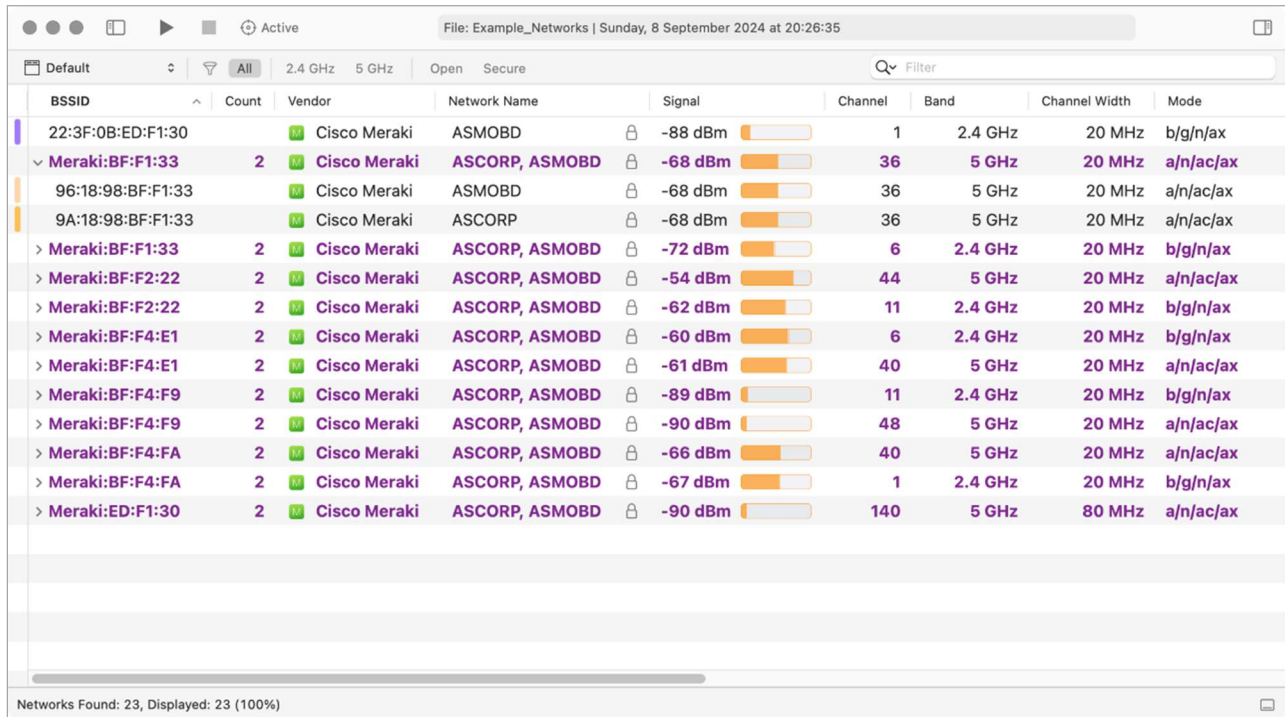


Figure 12-5 - Networks organized by access point radio



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

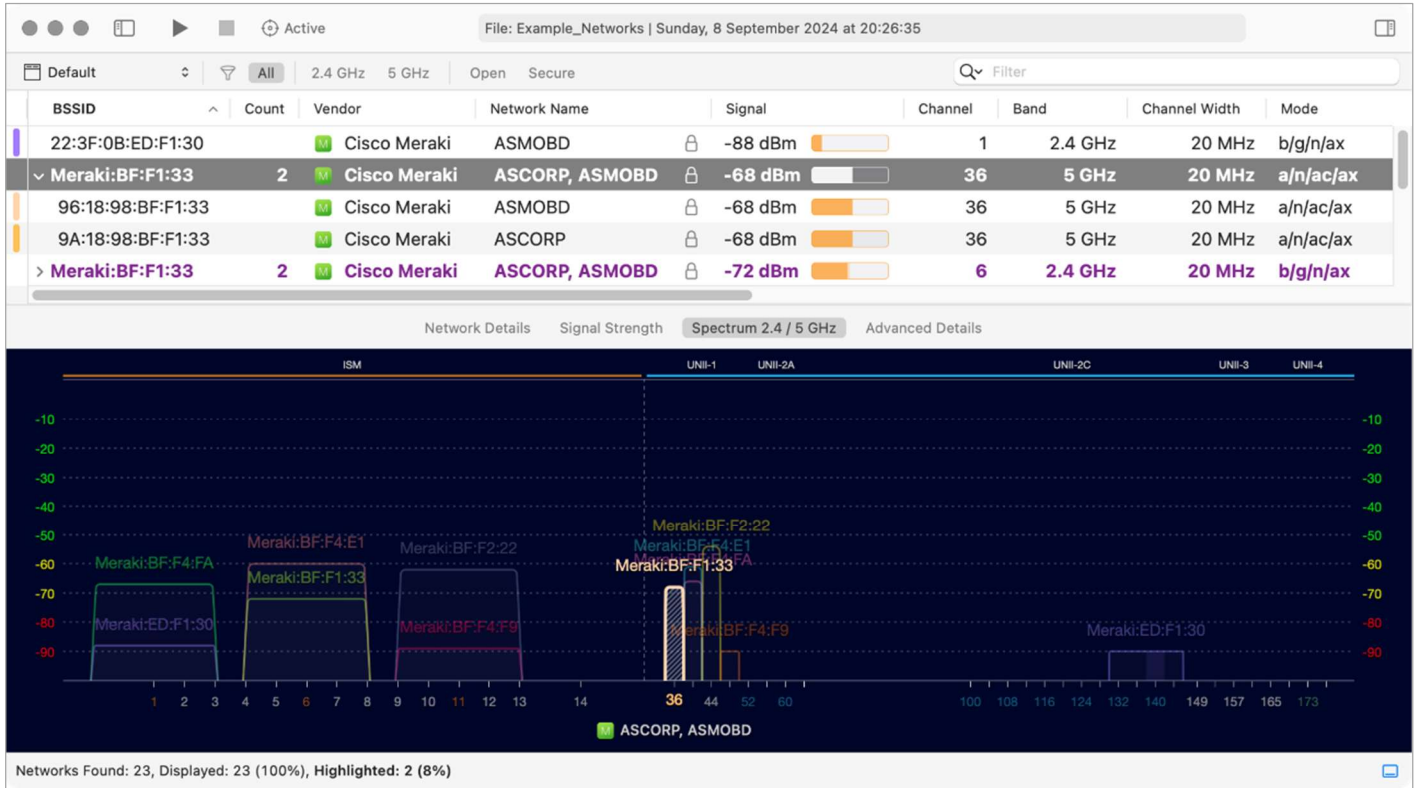


Figure 12-6 - Networks organized by access point radio in the spectrum view

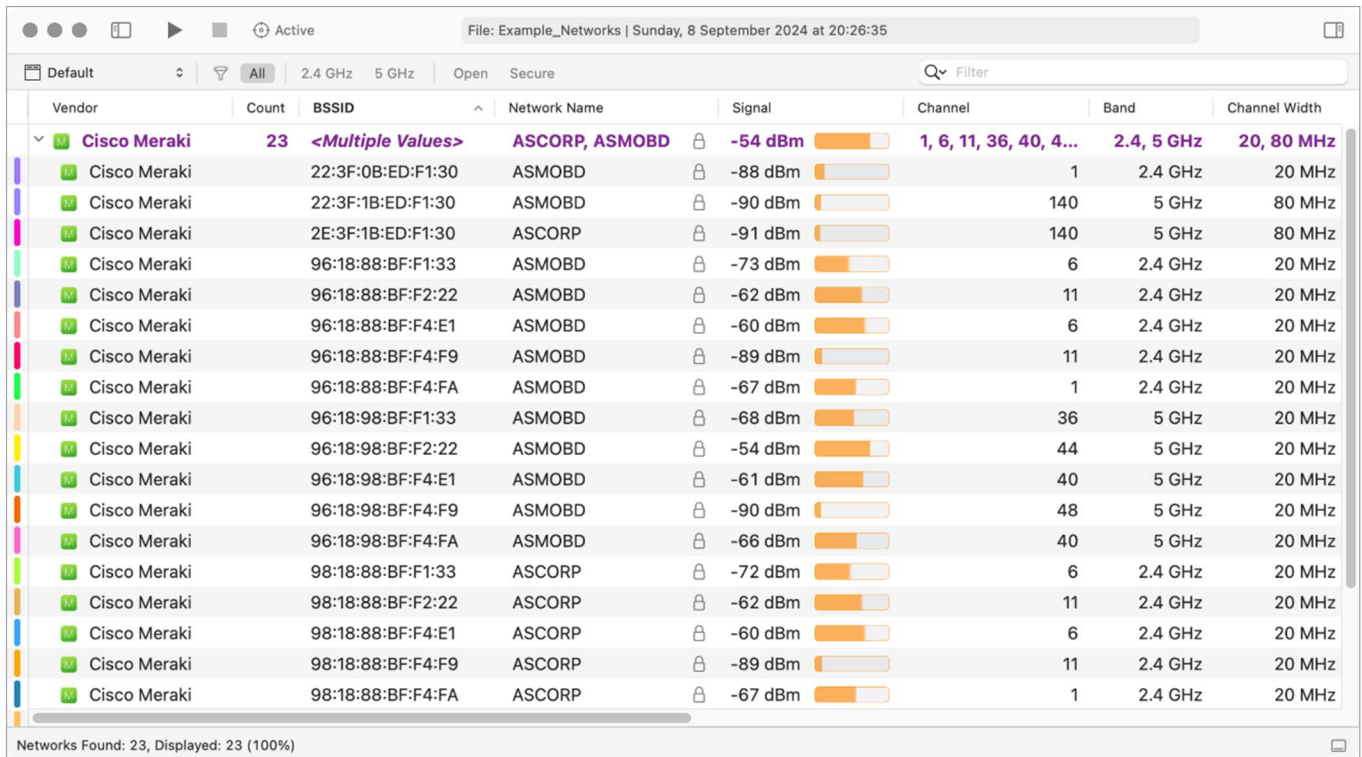


Figure 12-7 - Networks organized by access point vendor

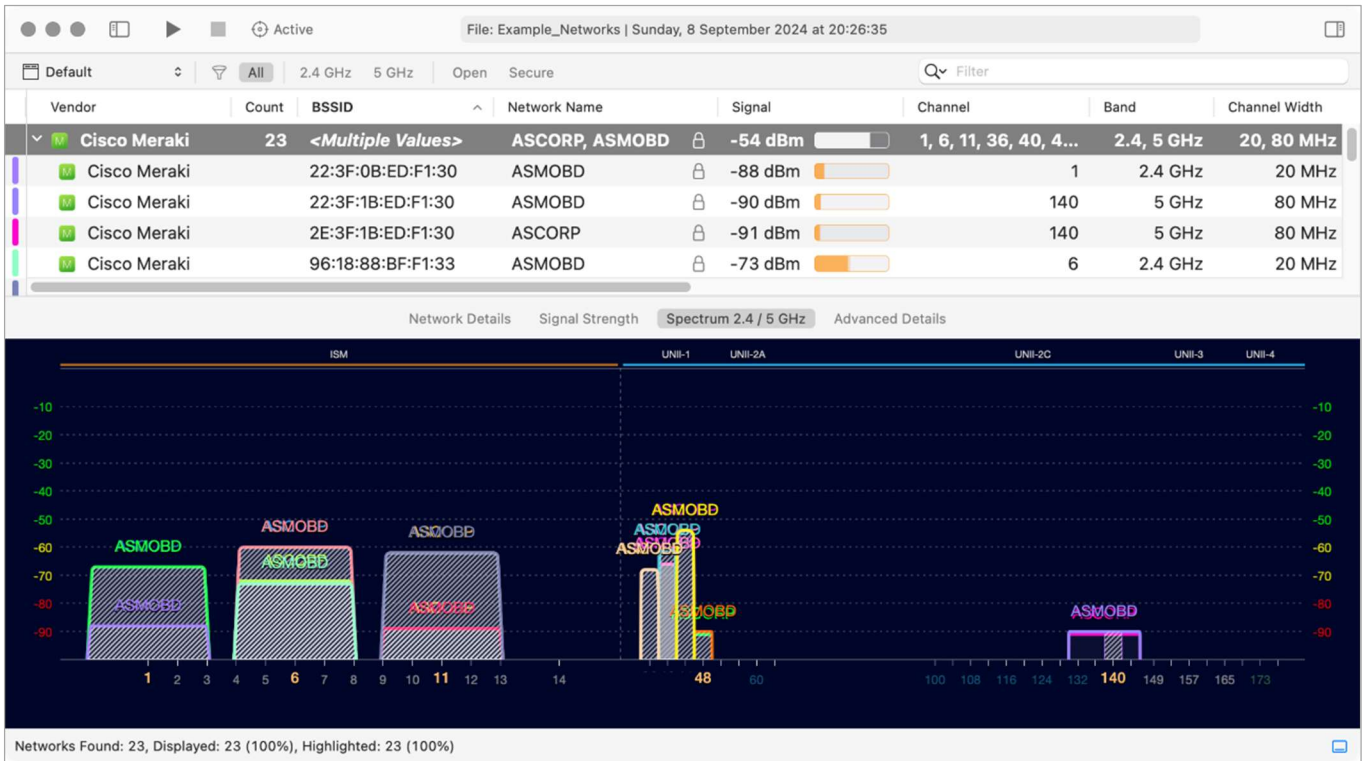


Figure 12-8 - Networks organized by vendor spectrum view with the vendor selected

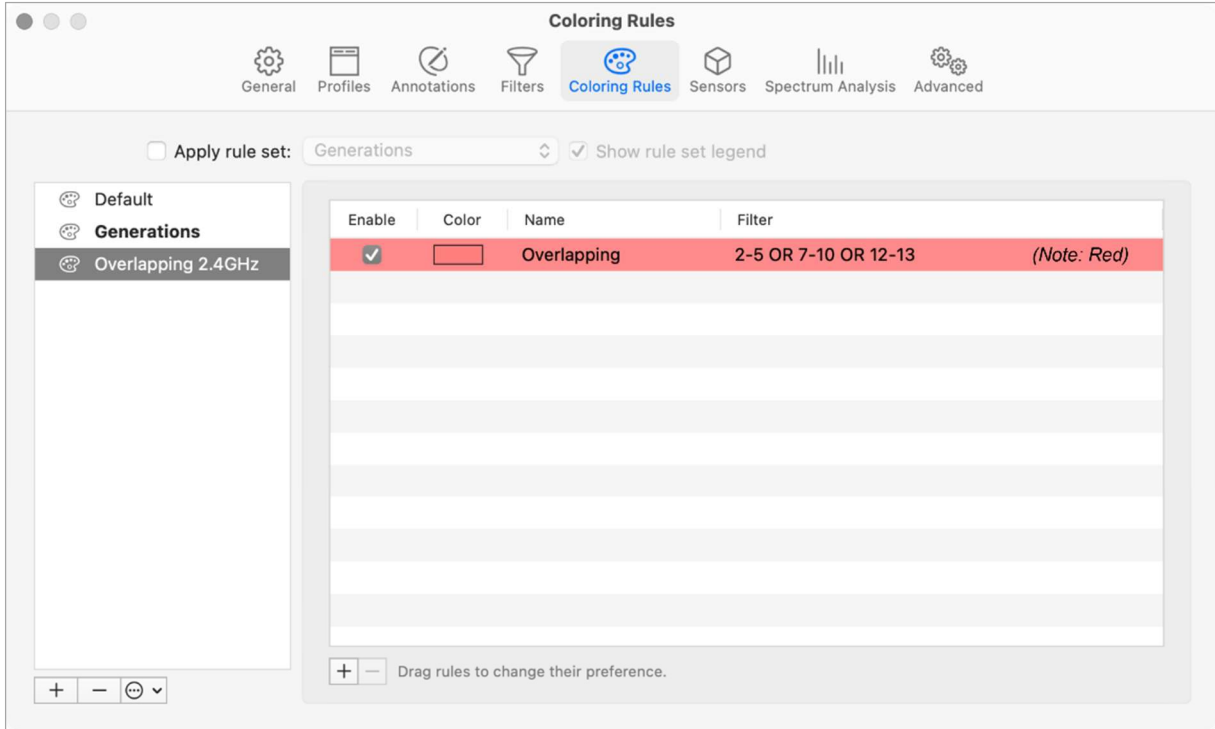


Figure 12-9 - Example coloring rule definition for 2.4 GHz overlapping channels



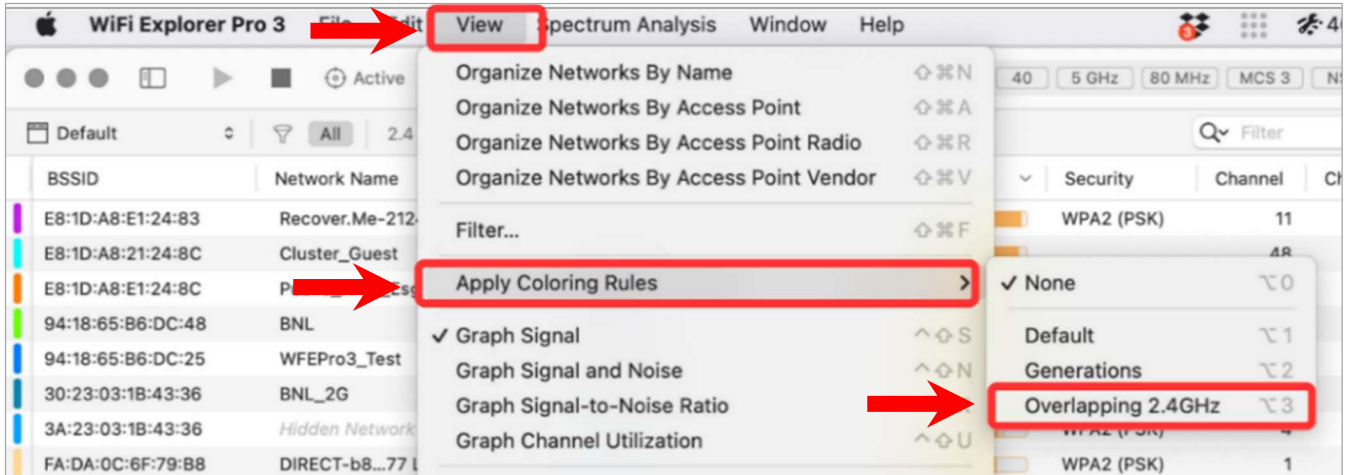


Figure 12-10 - Selecting coloring rule set for 2.4 GHz overlapping channels

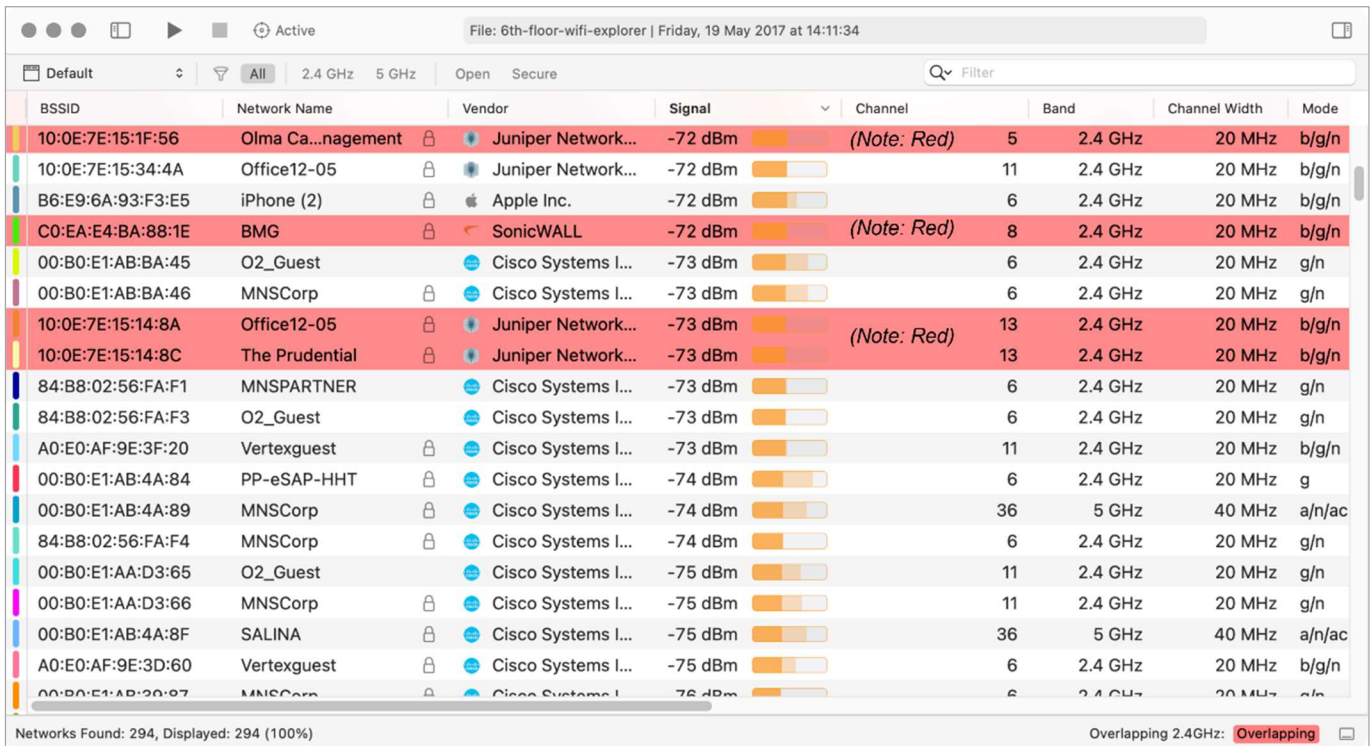


Figure 12-11 - Coloring rule for 2.4 GHz overlapping channels applied to networks table

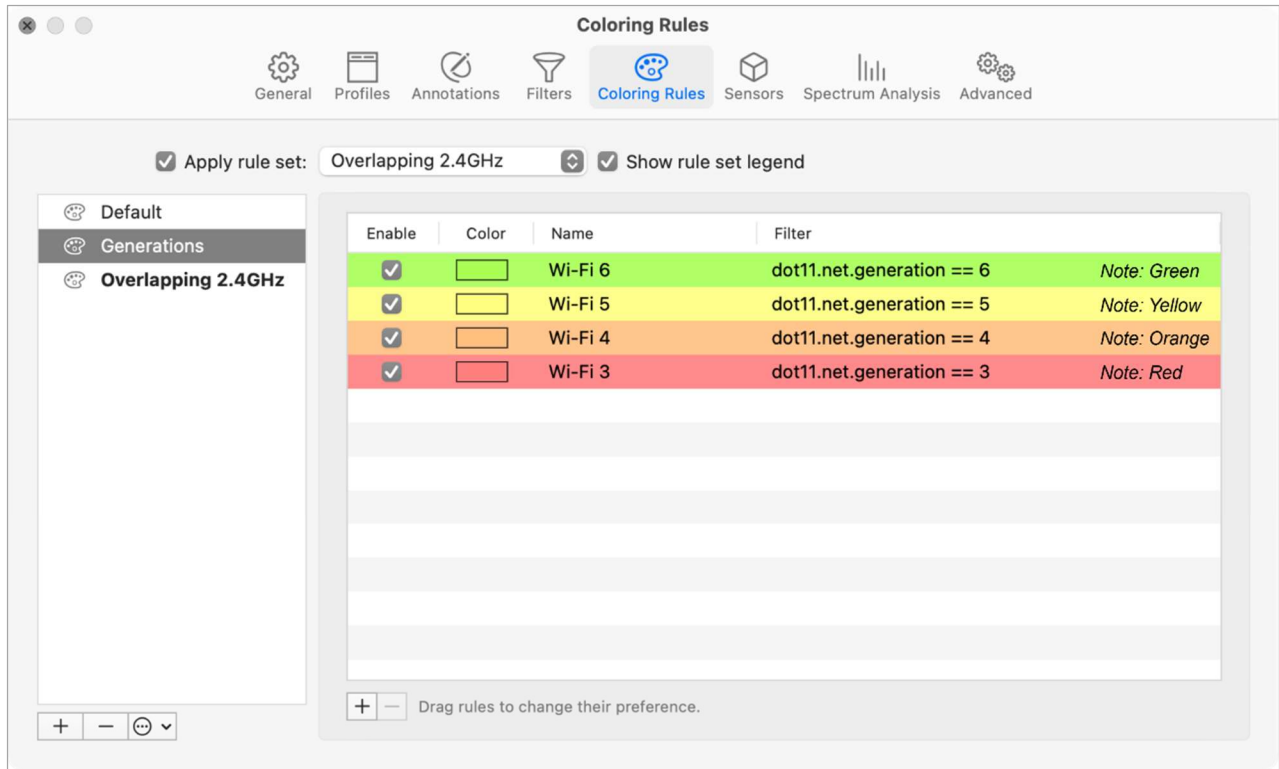


Figure 12-12 - The *Coloring Rules* settings tab

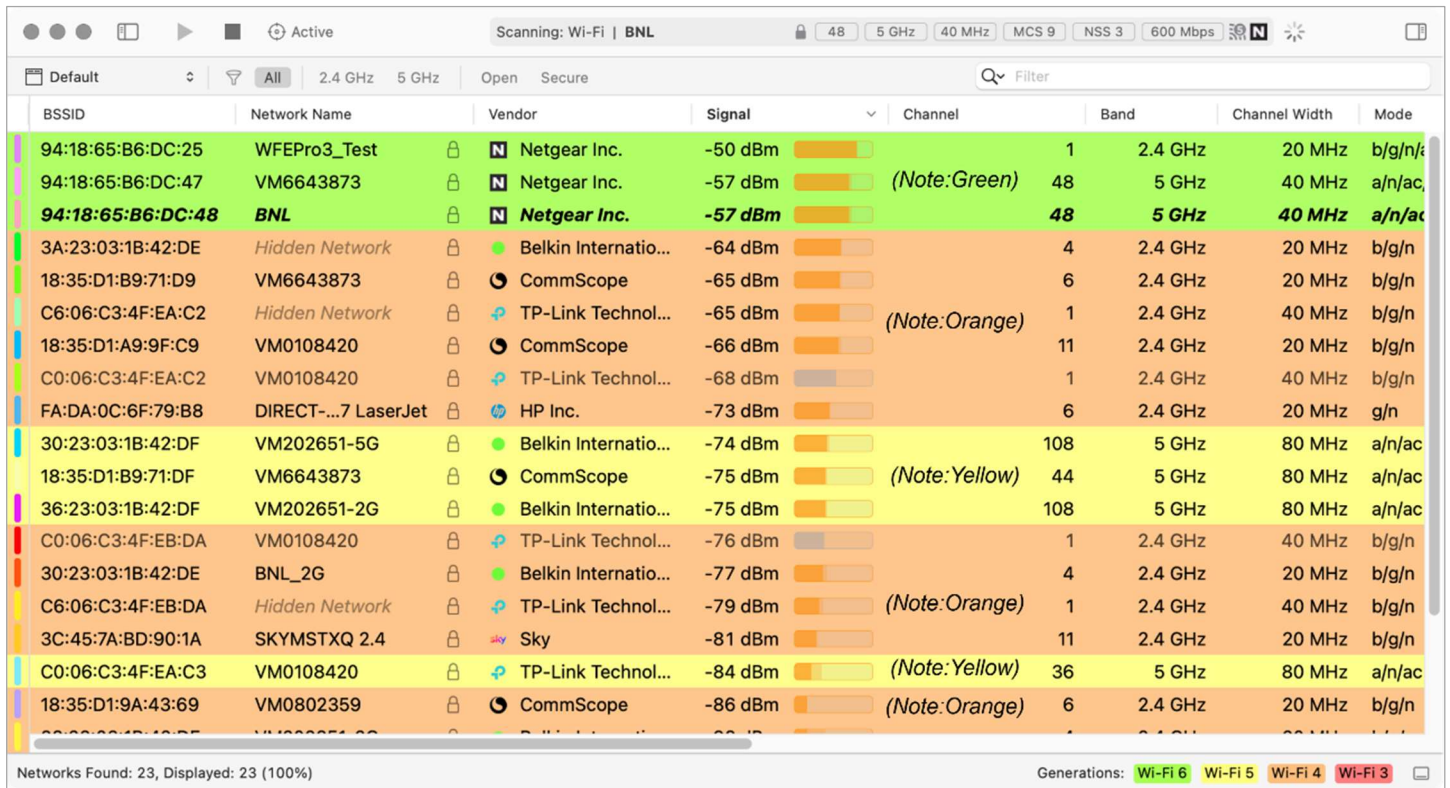


Figure 12-13 - *Networks Area* with *Generations* coloring rule applied

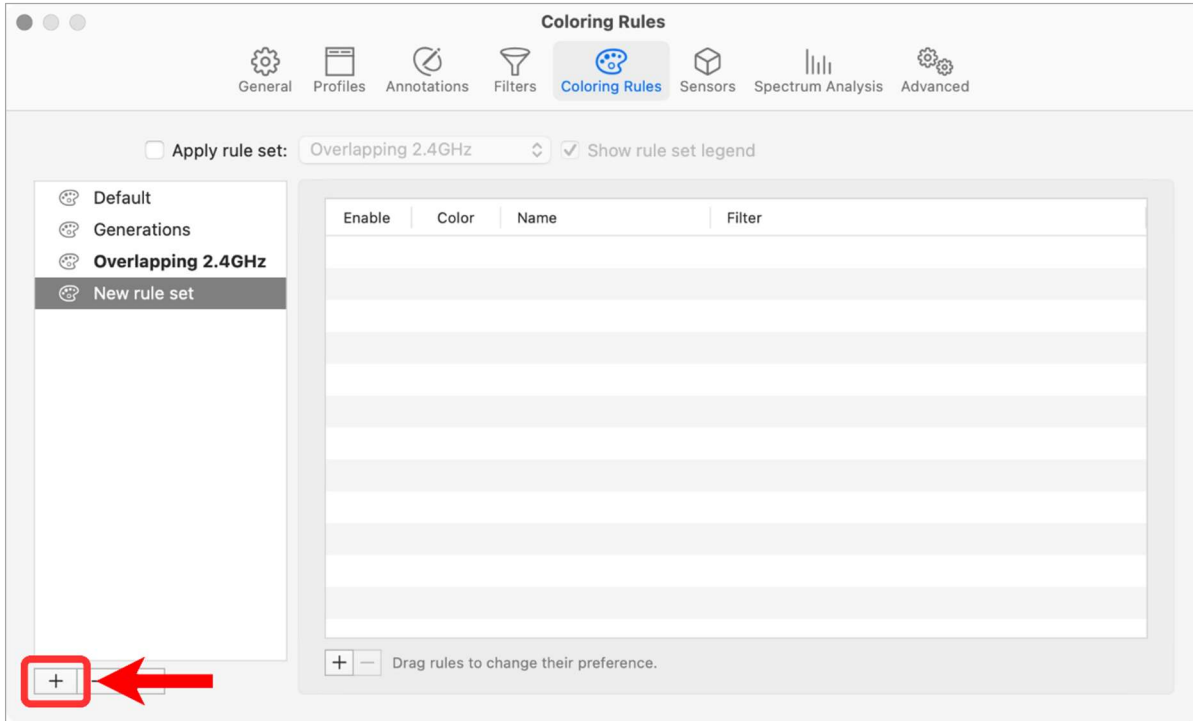


Figure 12-14 - Adding a new coloring rule set

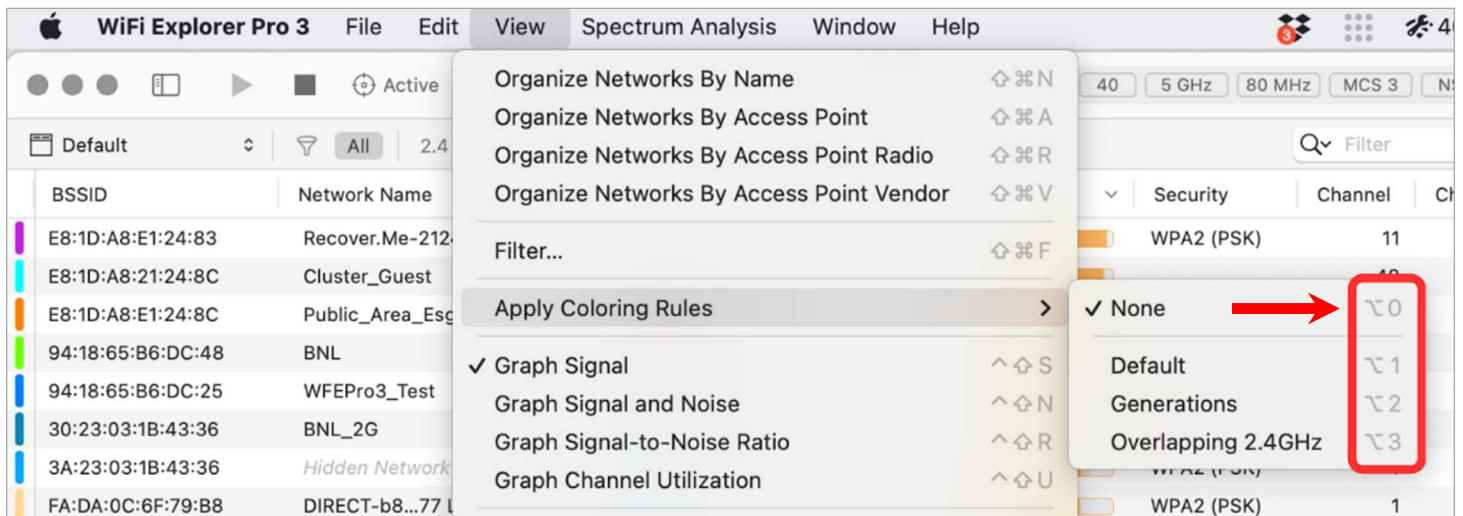


Figure 12-15 - Coloring rule set selection shortcuts

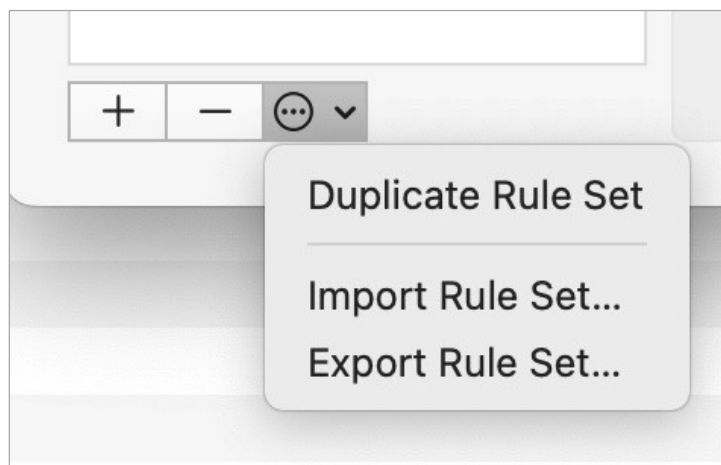


Figure 12-16 – The coloring rule sets list *More* button options

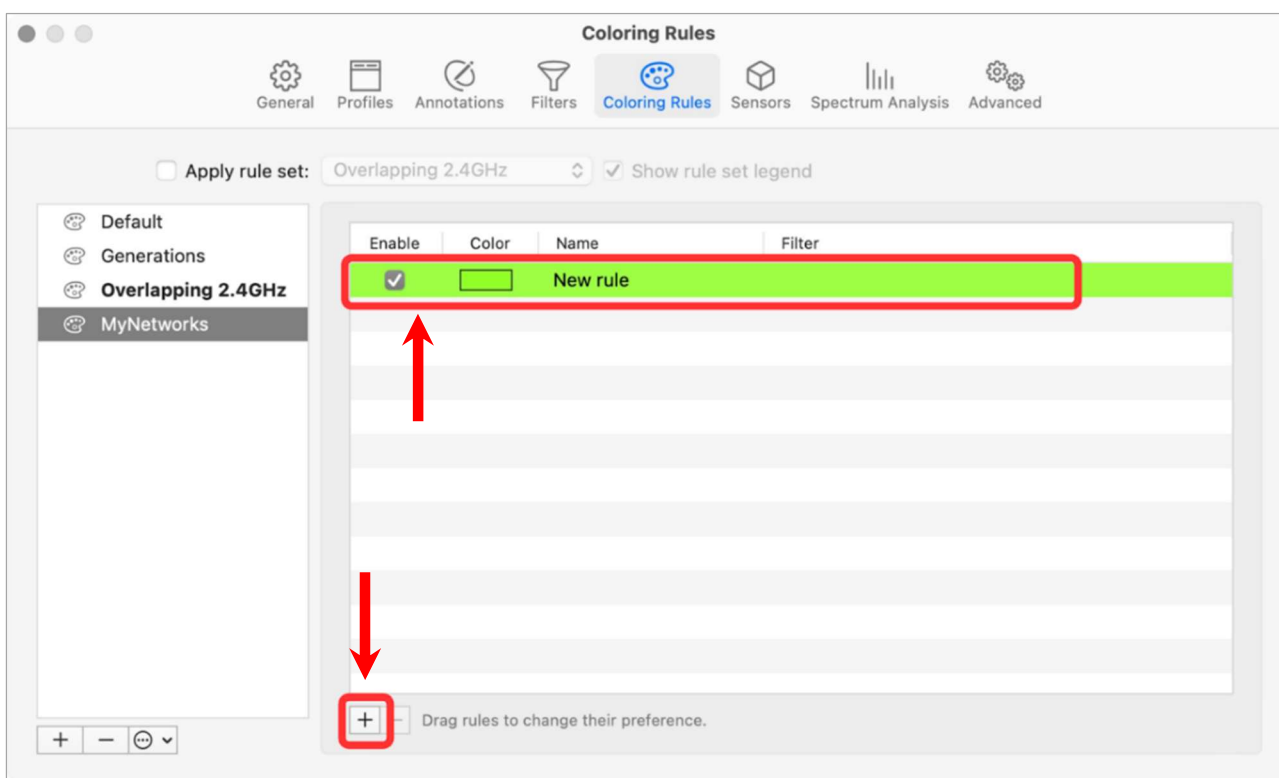


Figure 12-17 - Adding a new rule to a coloring rule set

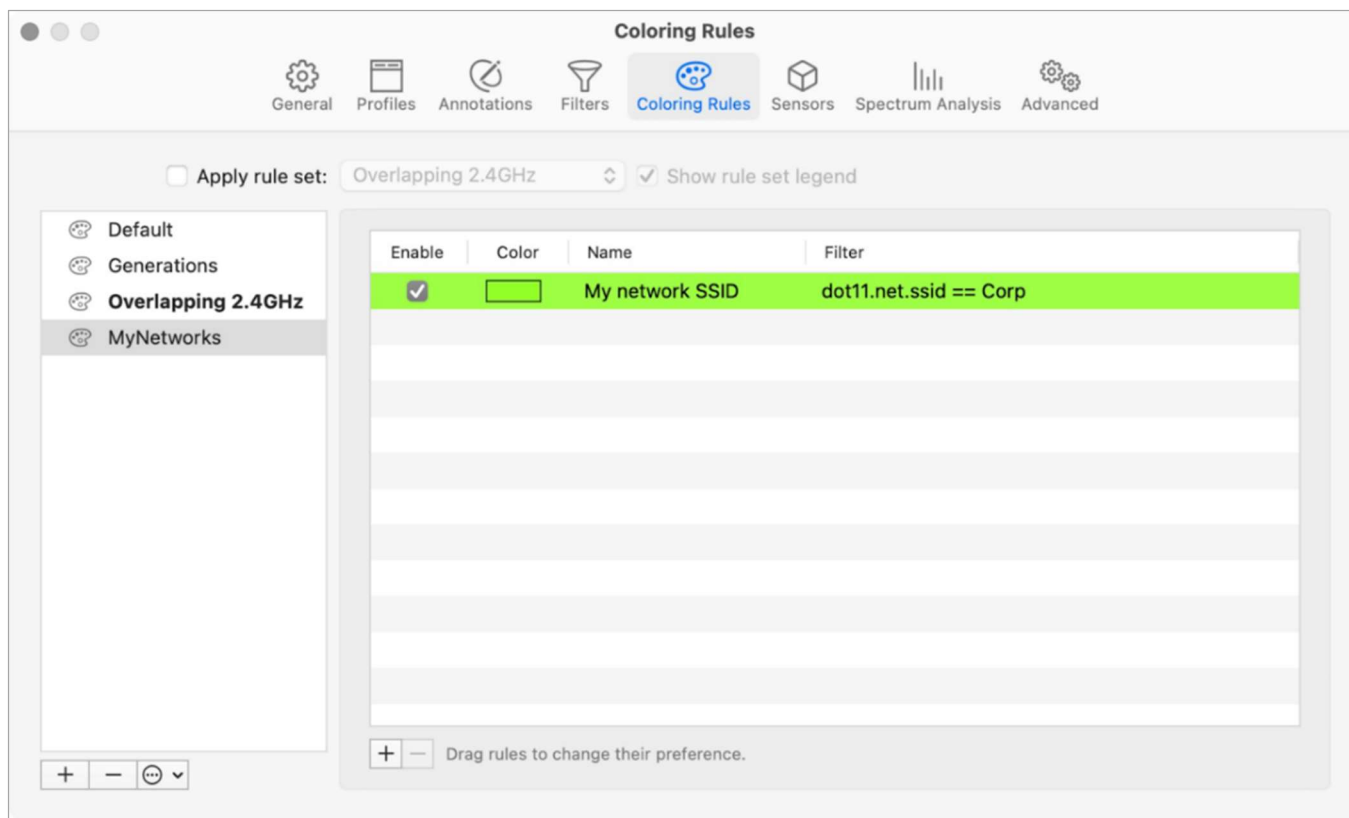


Figure 12-18 - A sample rule to colorize a specific SSID

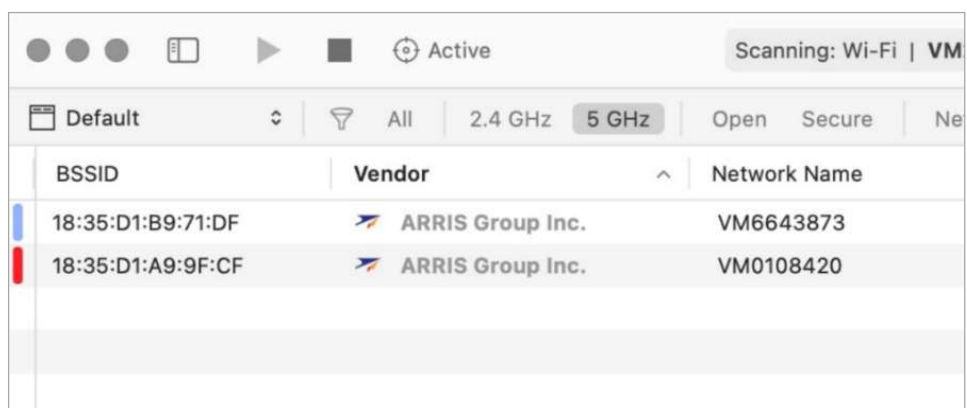


Figure 12-19 - Networks table showing Arris Group Inc. devices

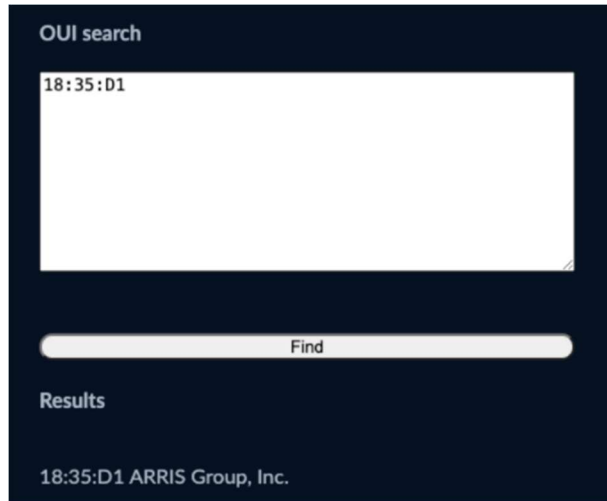


Figure 12-20 - Online lookup of the 18:35:D1 OUI details

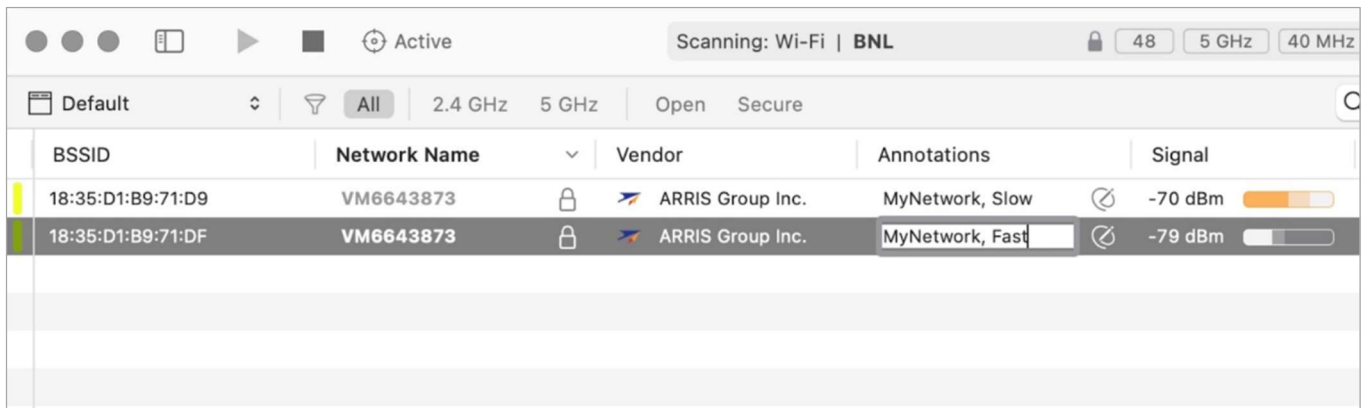


Figure 12-21 - Simple addition of annotations

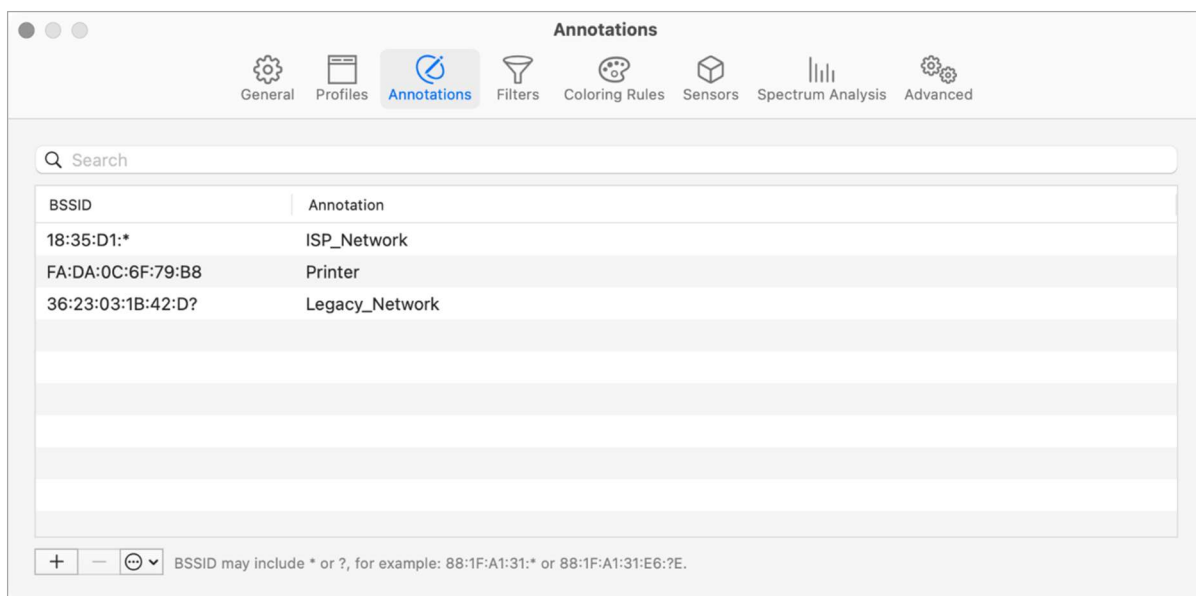


Figure 12-22 - The Annotations settings tab showing three annotation examples



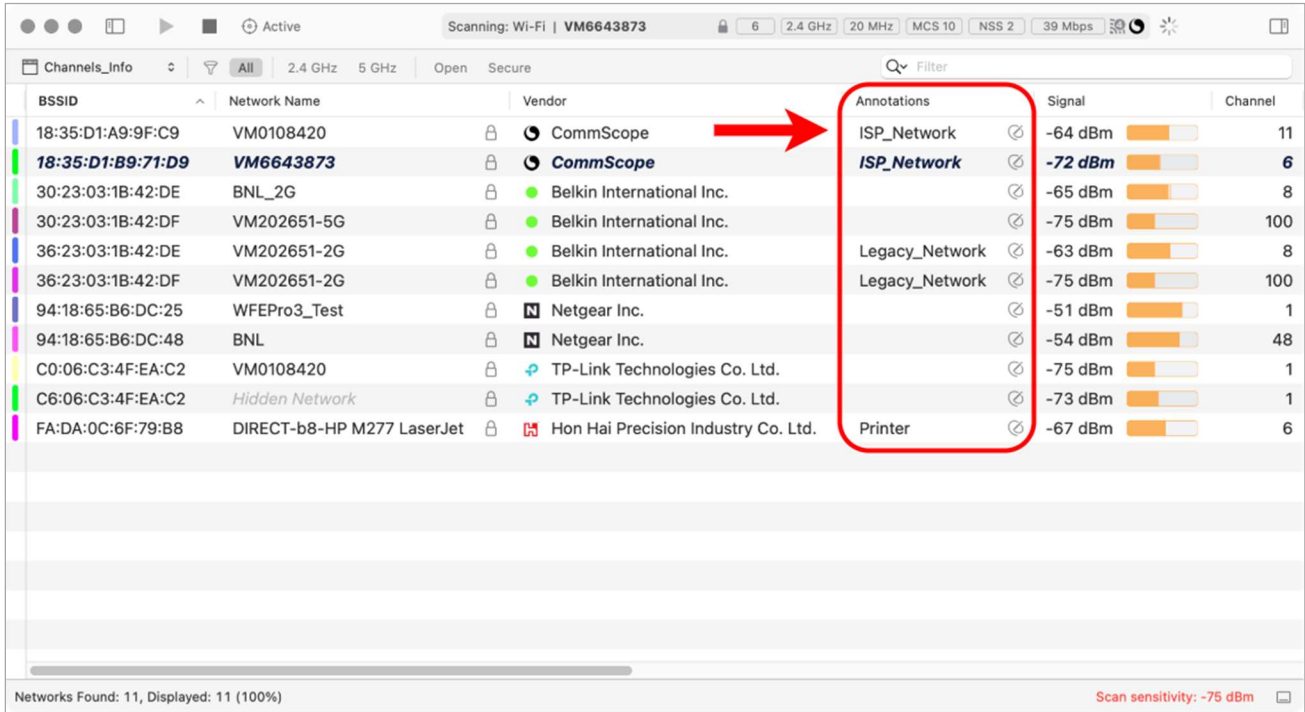


Figure 12-23 - Annotations example results in the networks table

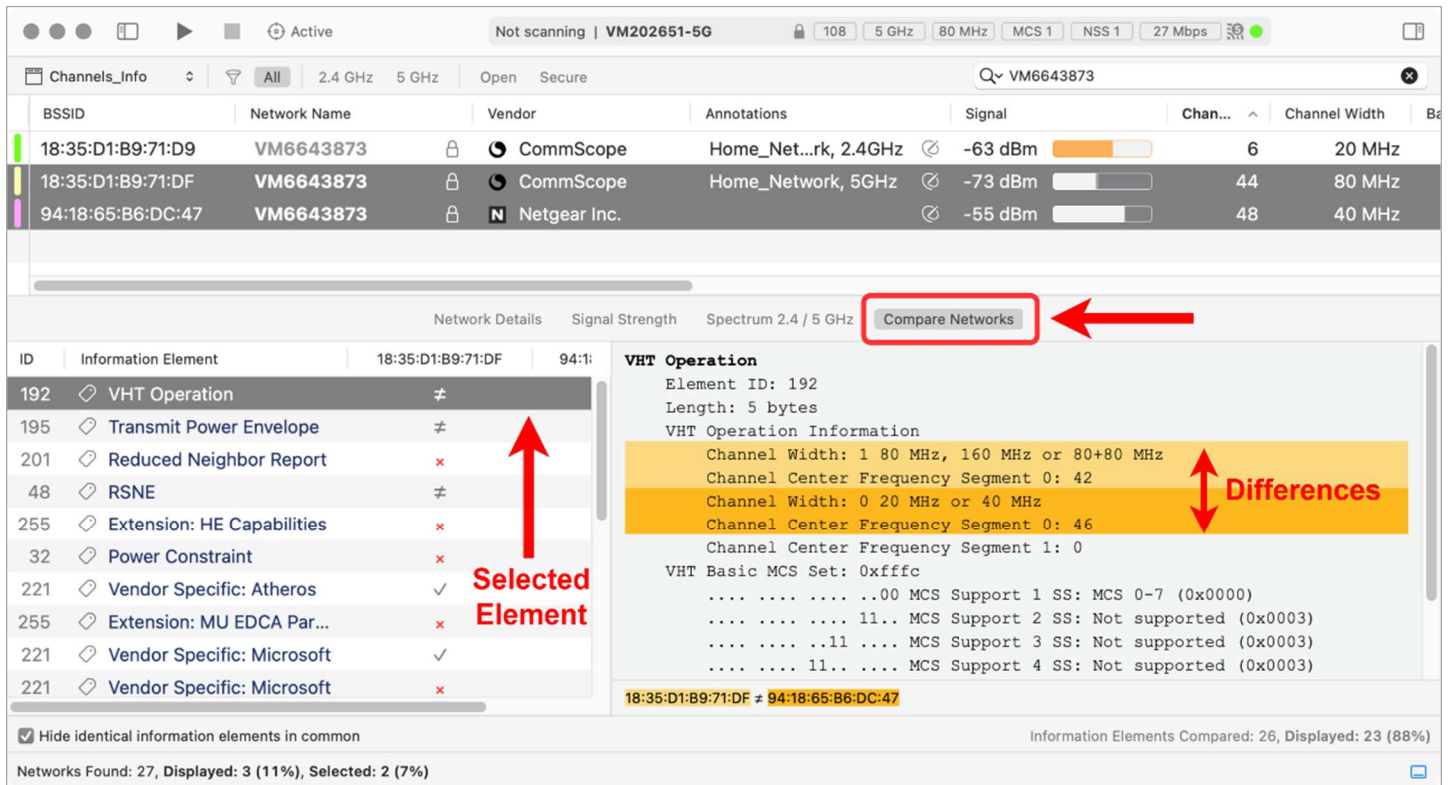


Figure 12-24 - Network Compare example

# Chapter 13 - Inspectors

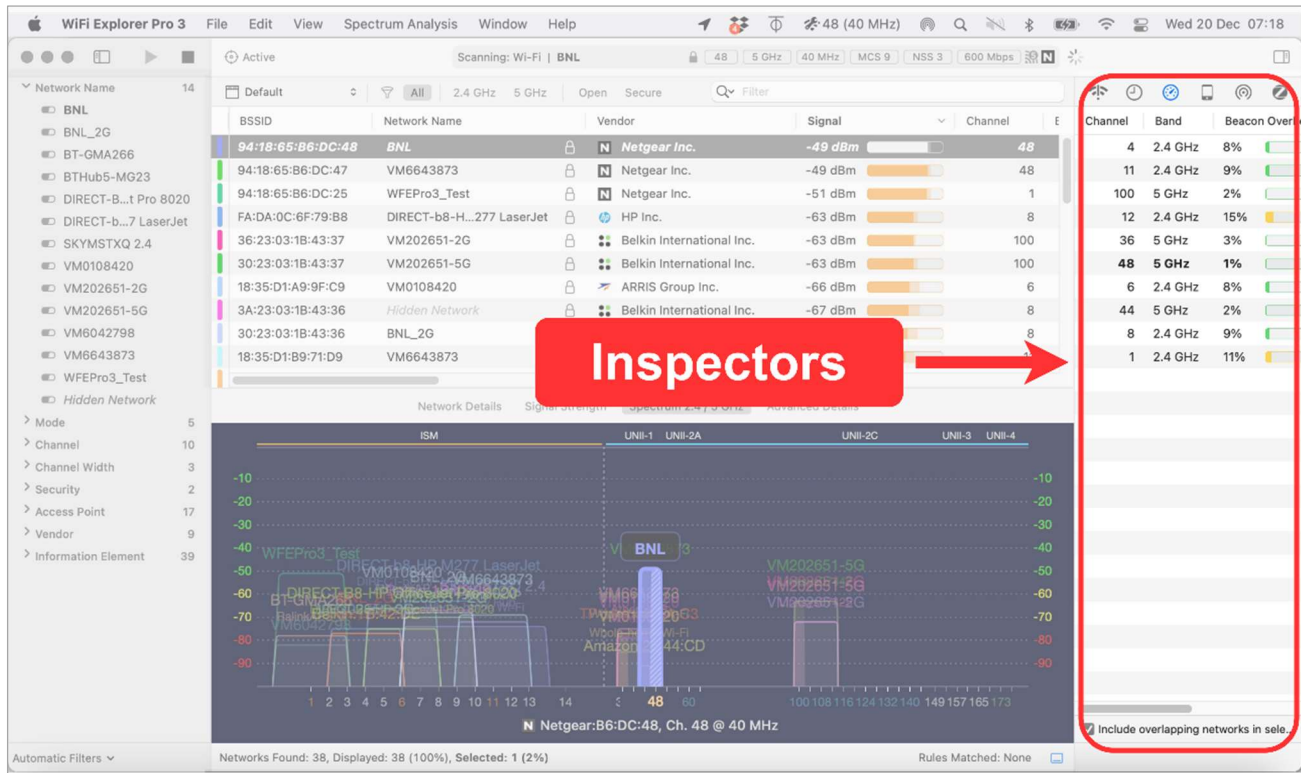


Figure 13-1 - Inspectors UI location

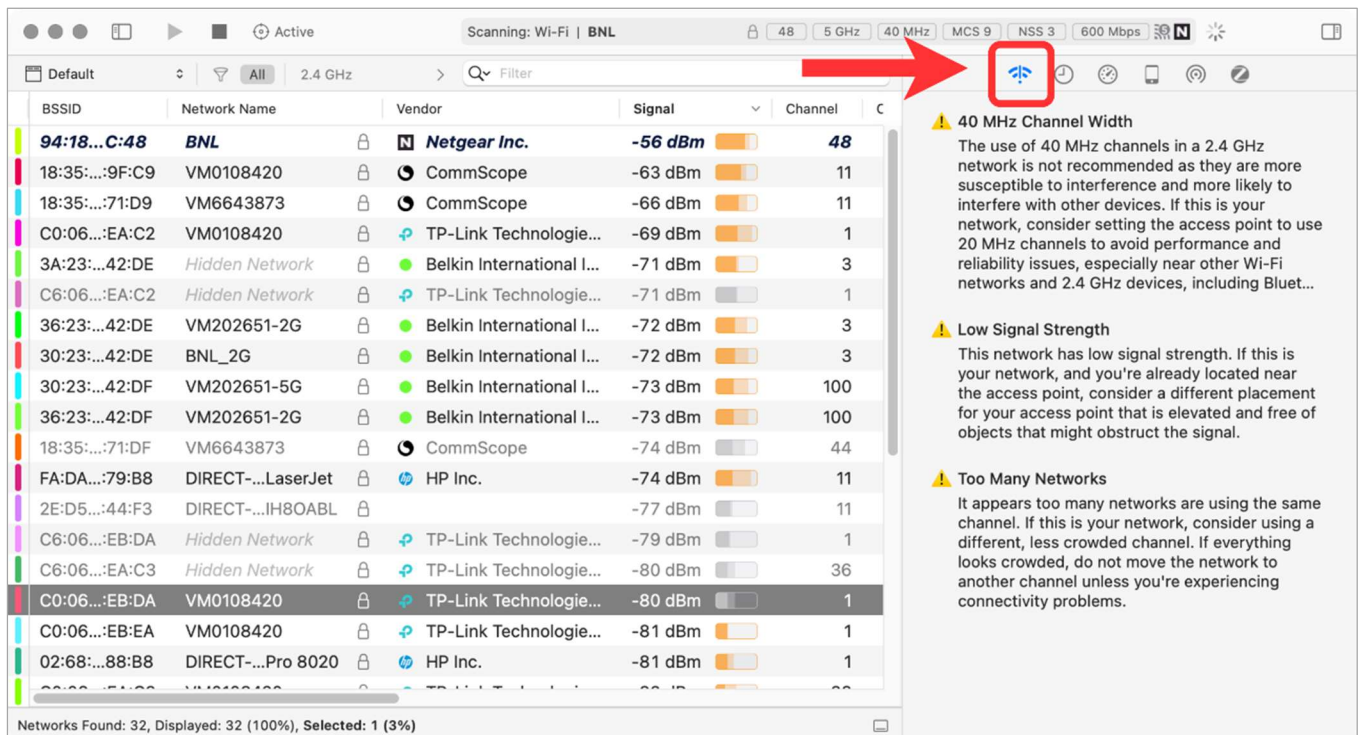


Figure 13-2 - Issues Inspector example showing multiple issues for a selected network



Timestamp	Signal	Noise	SNR	Clients	Stations	Channel Utilizat
Sat 02:03:18 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:18 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:14 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:12 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:10 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:08 pm	-79 dBm	-96 dBm	17 dB	0	0	7%
Sat 02:03:06 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:03:04 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:03:02 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:03:00 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:58 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:56 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:54 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:52 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:50 pm	-76 dBm	-96 dBm	20 dB	0	0	7%
Sat 02:02:48 pm	-82 dBm	-96 dBm	14 dB	0	0	8%
Sat 02:02:47 pm	-82 dBm	-96 dBm	14 dB	0	0	8%

	Signal	Noise	SNR
Average:	-79 dBm	-96 dBm	16 dB
Max:	-76 dBm	-96 dBm	20 dB
Min:	-84 dBm	-96 dBm	12 dB

Export...

Figure 13-5 - History Inspector with all columns enabled

VM6042798\_Cisco-1A-A6-9C

Timestamp	SSID	BSSID	Channel	Channel Width	Signal (dBm)	Noise (dBm)	SNR (dB)	Stations	Channel Utilization (%)
Fri 05:52:48 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-83	-96	13	1	16
Fri 05:52:49 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-83	-96	13	1	16
Fri 05:53:02 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 05:53:03 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 05:53:06 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 05:53:27 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 05:53:29 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 05:53:31 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:38 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:43 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:44 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:46 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:48 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:50 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16
Fri 06:06:52 am	VM6042798	0A:1F:26:1A:A6:9C	11	20 MHz	-82	-96	14	1	16

Figure 13-6 - History Inspector exported CSV data shown in a spreadsheet app



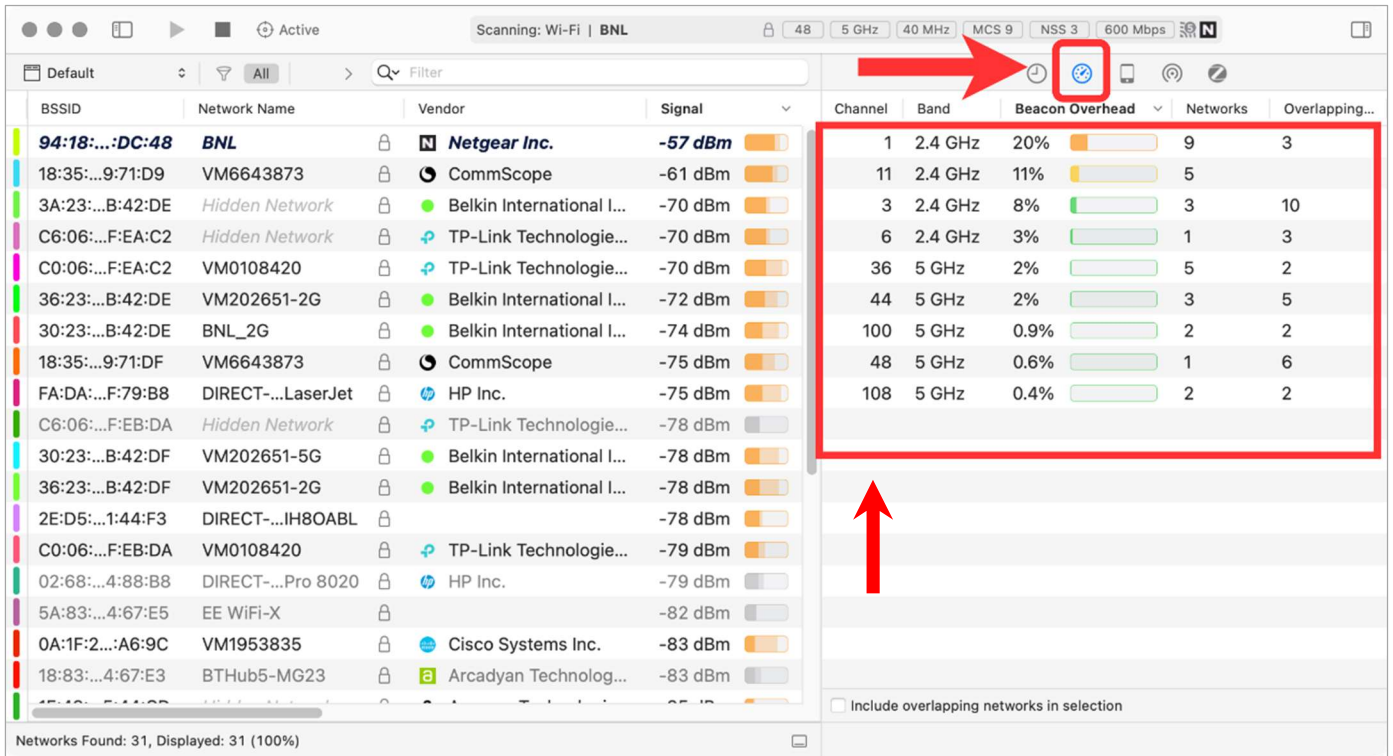


Figure 13-7 - Utilization Inspector summary data

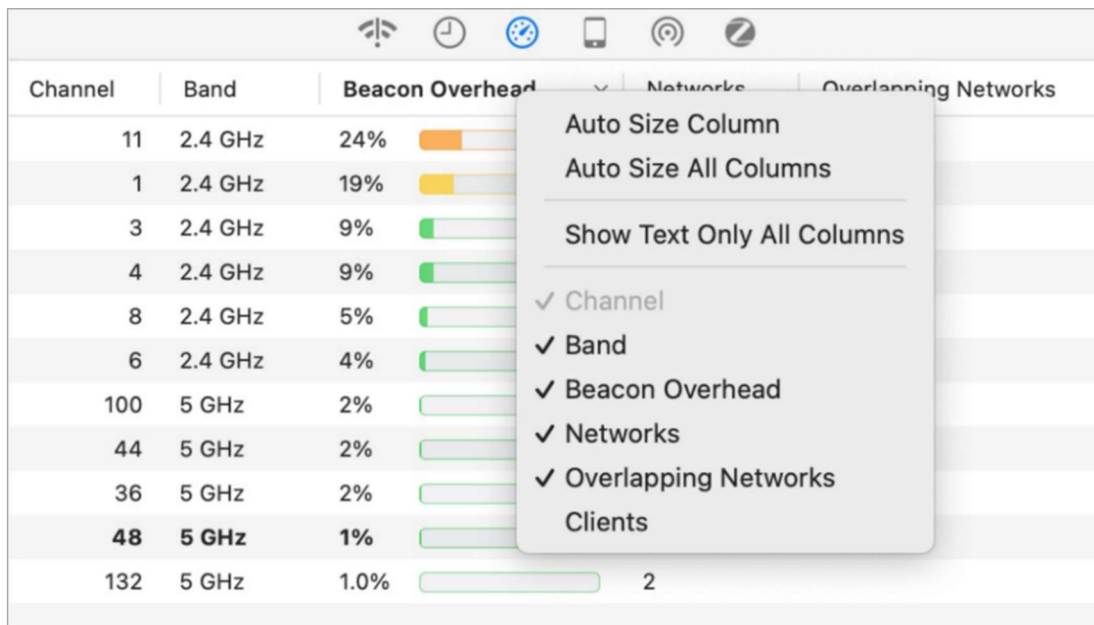


Figure 13-8 - Utilization Inspector column display options

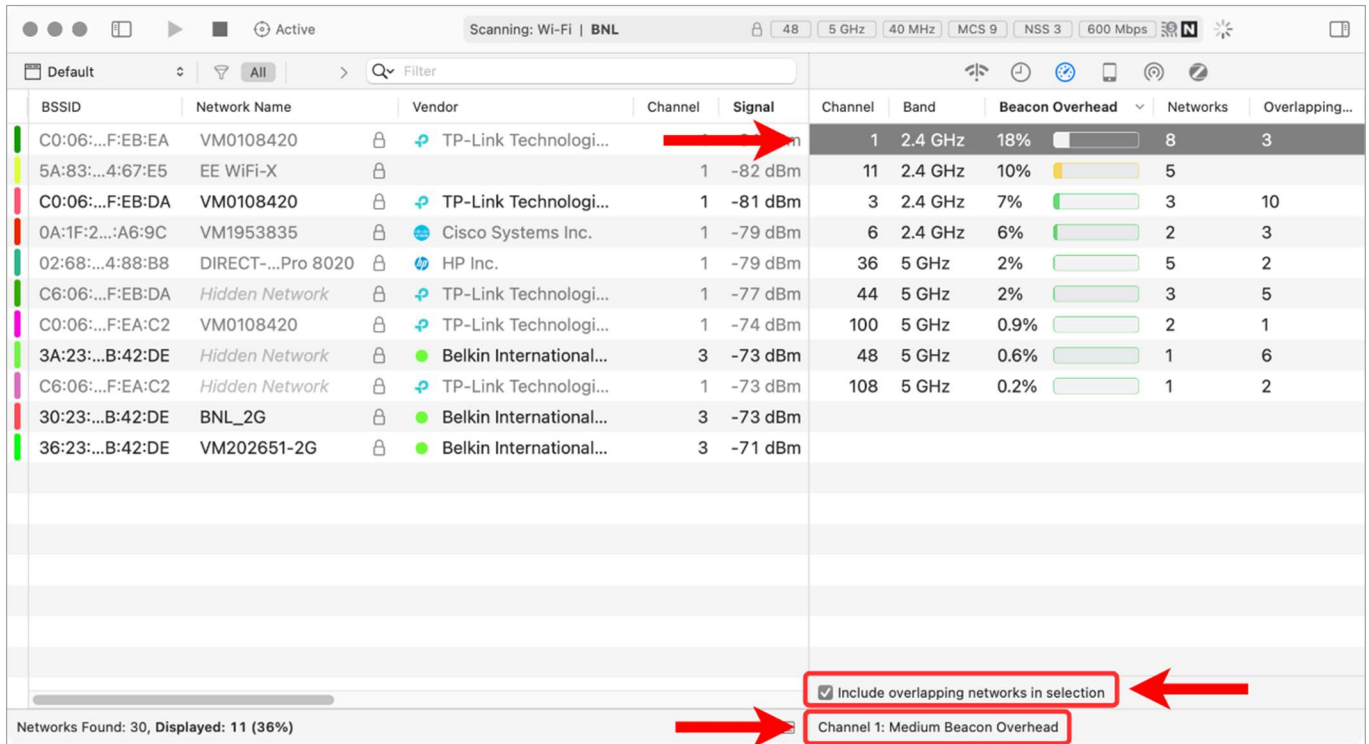


Figure 13-9 - Utilization Inspector with selected entry

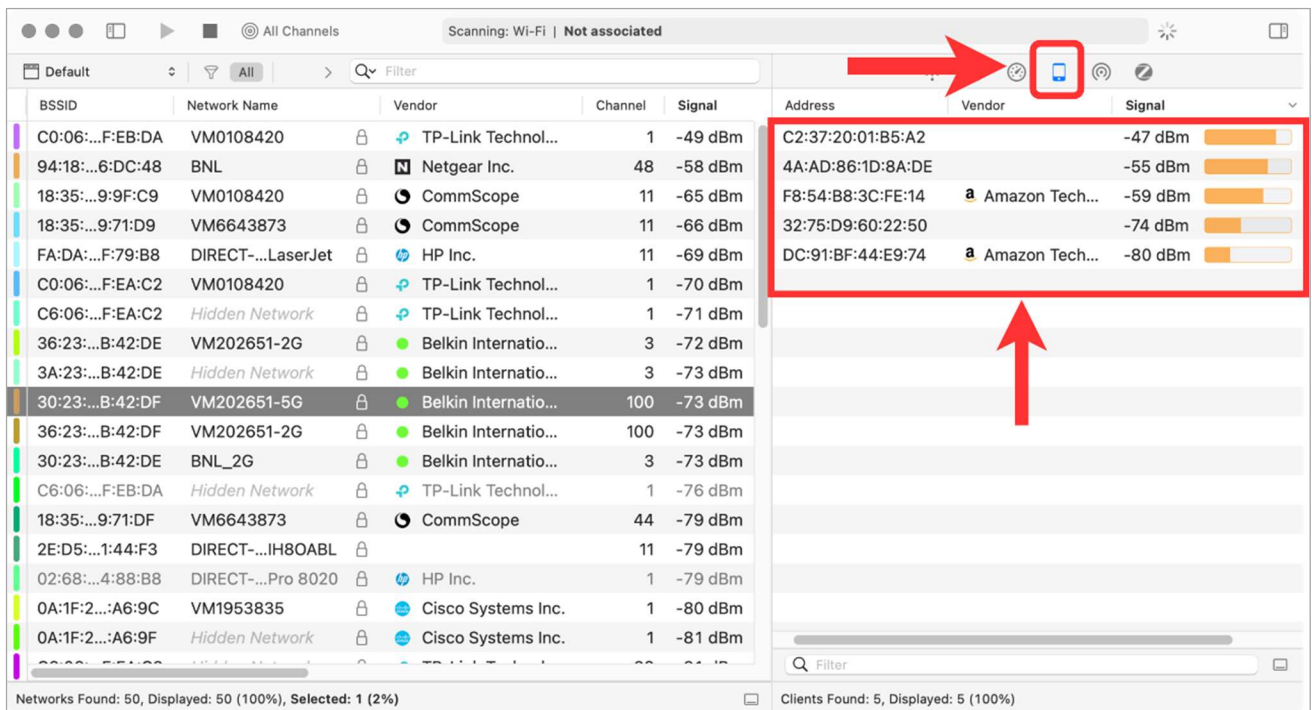


Figure 13-10 - Clients Inspector showing client data for a selected network



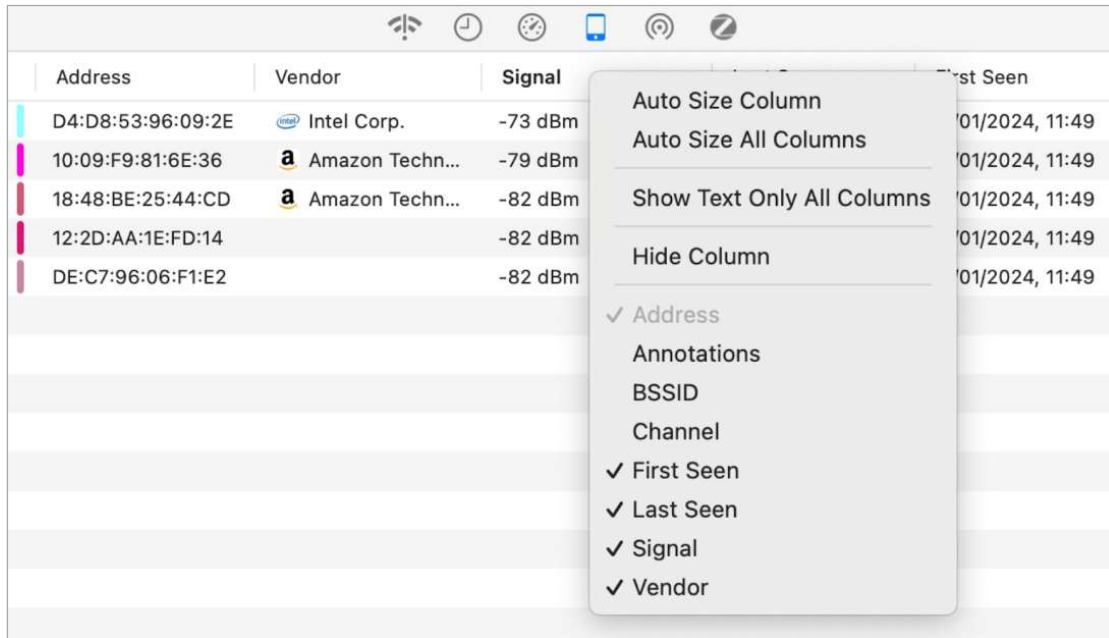


Figure 13-11 - Clients Inspector column display options

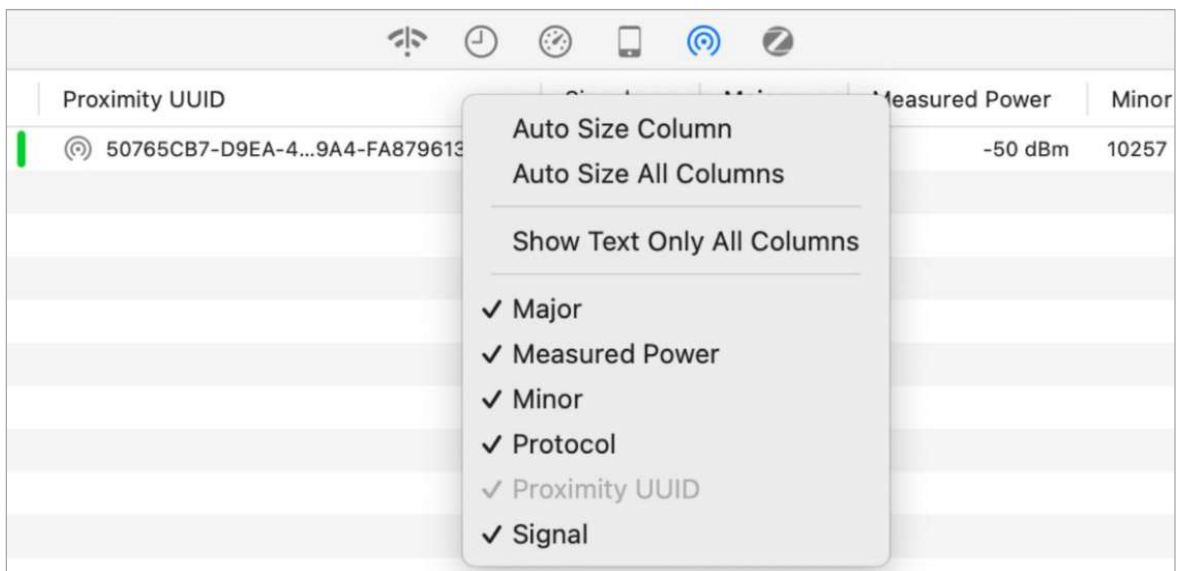


Figure 13-12 - Proximity Beacons Inspector column display options

PAN ID	Channel	Signal	Link Quality	Frequency
BE1D	25	-39 dBm	58%	2475 MHz
B373	25	-40 dBm	100%	2475 MHz

Figure 13-13 - Zigbee network discovery

# Chapter 14 - Troubleshooting Workflow

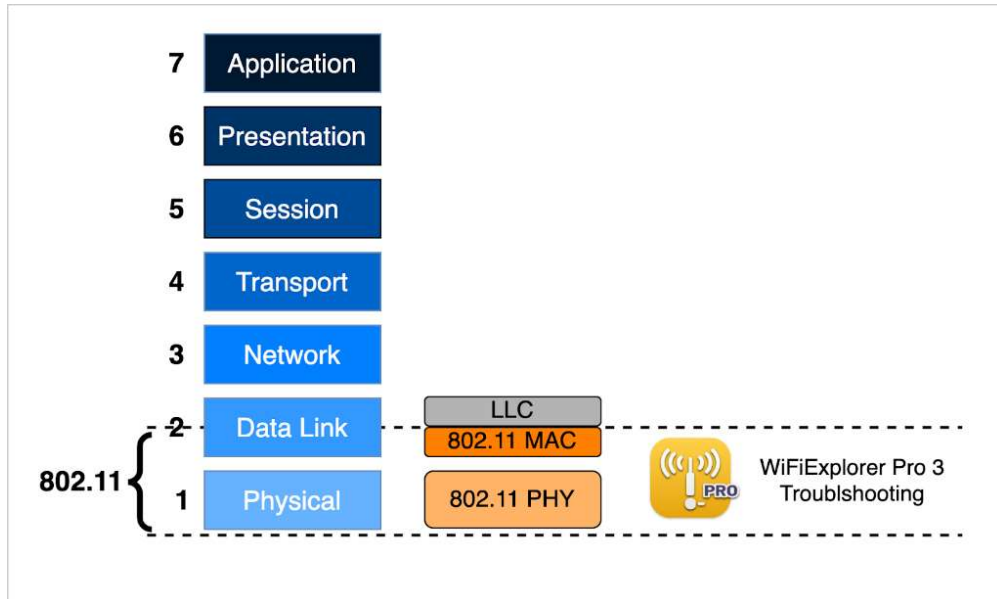


Figure 14-1 - WFE Pro 3 capabilities within the OSI seven-layer model

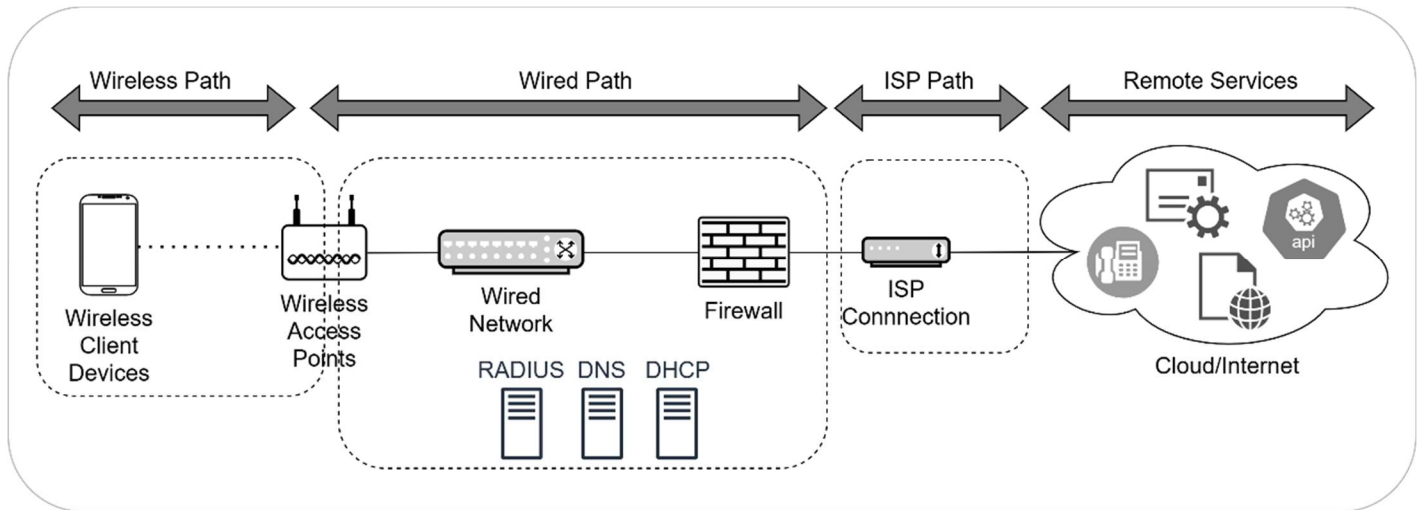


Figure 14-2 - Simplified network model

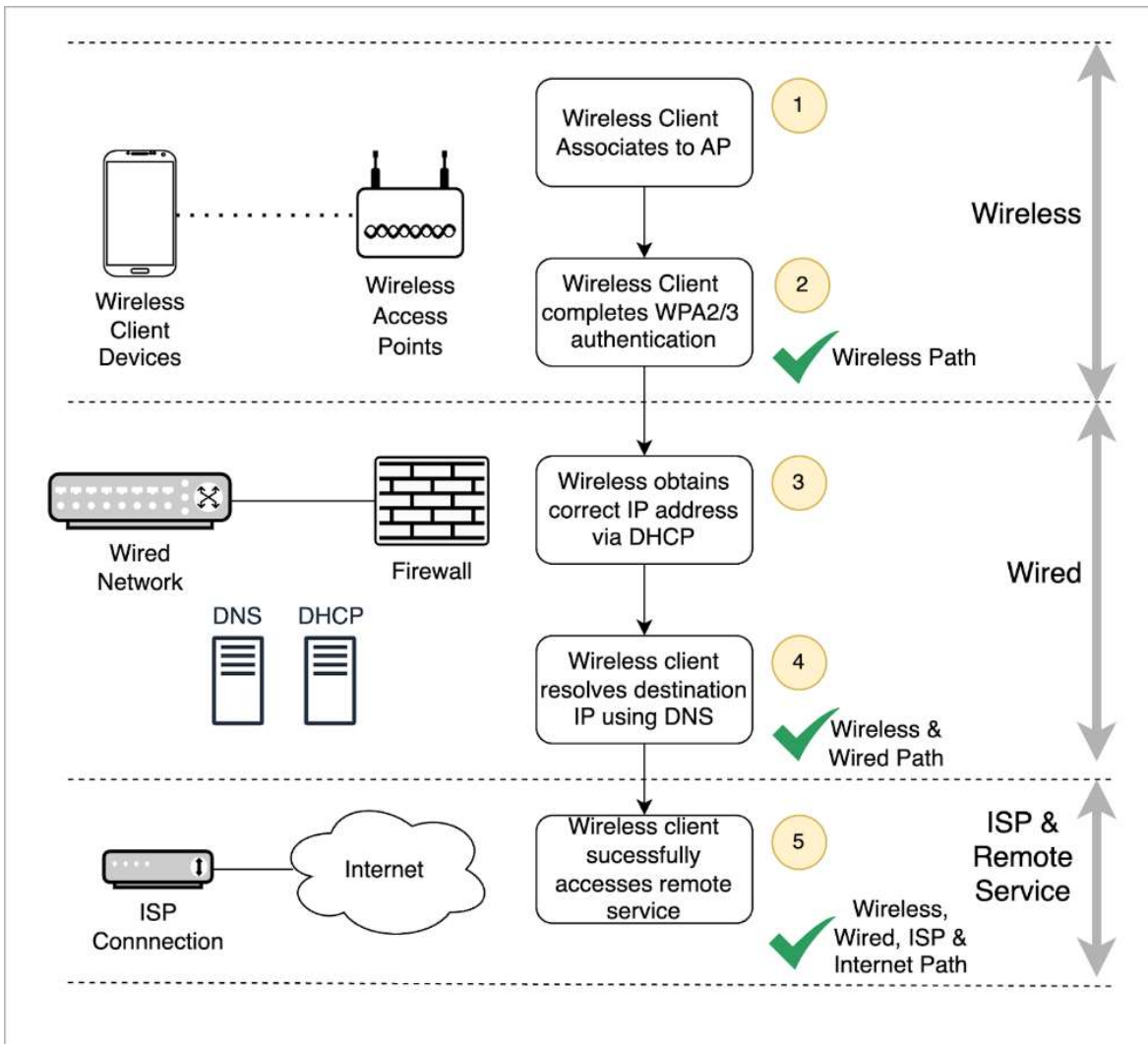


Figure 14-3 - Connectivity flow & dependencies

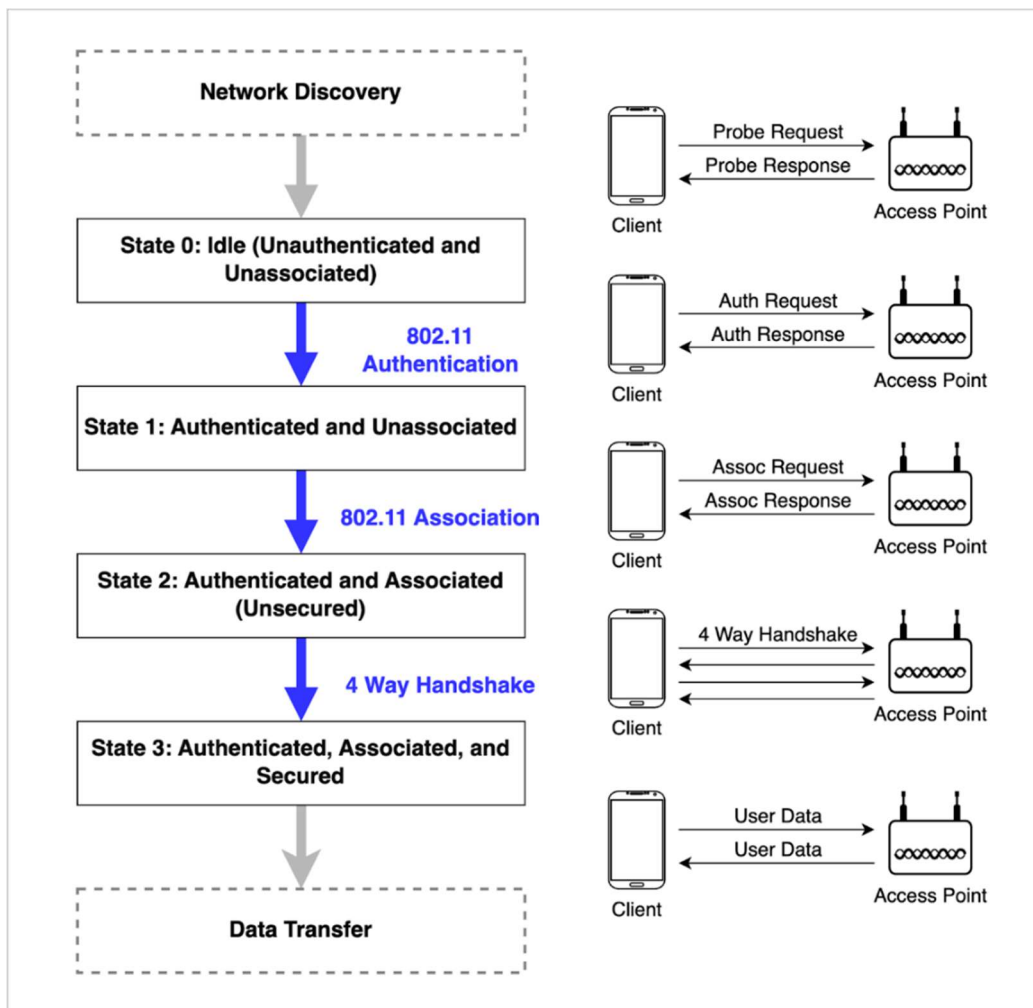


Figure 14-4 - 802.11 state machine

File: Corp\_Scan\_Session | Monday, 16 December 2024 at 18:48:11

Connectivity\_Chec... | All | 2.4 GHz | 5 GHz | Open | Secure | dot11.net.ssid == CORP

BSSID	Network Name	Band	Channel	Signal	SNR
A8:F7:D9:1A:83:C1	CORP	2.4 GHz	1	-51 dBm	45 dB
A8:F7:D9:1A:96:91	CORP	5 GHz	48	-55 dBm	41 dB
A8:F7:D9:1A:83:A1	CORP	5 GHz	36	-56 dBm	40 dB
A8:F7:D9:1A:8A:01	CORP	5 GHz	64	-57 dBm	39 dB
A8:F7:D9:1A:90:91	CORP	5 GHz	36	-59 dBm	37 dB
A8:F7:D9:1A:96:B1	CORP	2.4 GHz	6	-59 dBm	37 dB
A8:F7:D9:1A:8A:21	CORP	2.4 GHz	1	-60 dBm	36 dB
A8:F7:D9:1A:90:B1	CORP	2.4 GHz	1	-61 dBm	35 dB
A8:F7:D9:1A:8B:21	CORP	5 GHz	48	-63 dBm	33 dB
A8:F7:D9:1A:95:41	CORP	5 GHz	60	-64 dBm	32 dB
A8:F7:D9:30:B8:71	CORP	5 GHz	40	-65 dBm	31 dB
A8:F7:D9:1A:85:81	CORP	5 GHz	60	-67 dBm	29 dB
A8:F7:D9:1A:8B:41	CORP	2.4 GHz	1	-67 dBm	29 dB
A8:F7:D9:30:B8:91	CORP	2.4 GHz	1	-68 dBm	28 dB
A8:F7:D9:1A:85:A1	CORP	2.4 GHz	6	-69 dBm	27 dB
A8:F7:D9:1A:95:61	CORP	2.4 GHz	11	-69 dBm	27 dB
A8:F7:D9:1A:8D:C1	CORP	5 GHz	52	-70 dBm	26 dB
A8:F7:D9:1A:5A:F1	CORP	5 GHz	40	-74 dBm	22 dB
A8:F7:D9:1A:75:31	CORP	5 GHz	64	-74 dBm	22 dB

Networks Found: 158, Displayed: 30 (18%)

Figure 14-5 - CORP SSID checking

Profiles

General Profiles Annotations Filters Coloring Rules Sensors Spectrum Analysis Advanced

Active profile: Connectivity\_Checks  Show profile chooser in toolbar

Show	Pin	Name	Field
<input checked="" type="checkbox"/>	<input type="checkbox"/>	BSSID	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Network Name	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Band	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Channel	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Signal	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SNR	
<input type="checkbox"/>	<input type="checkbox"/>	Count	
<input type="checkbox"/>	<input type="checkbox"/>	Vendor	
<input type="checkbox"/>	<input type="checkbox"/>	Device Name	
<input type="checkbox"/>	<input type="checkbox"/>	Annotations	
<input type="checkbox"/>	<input type="checkbox"/>	Noise	
<input type="checkbox"/>	<input type="checkbox"/>	Center Frequency	

+ - Drag columns to change their order.

Figure 14-6 - Connectivity checks profile



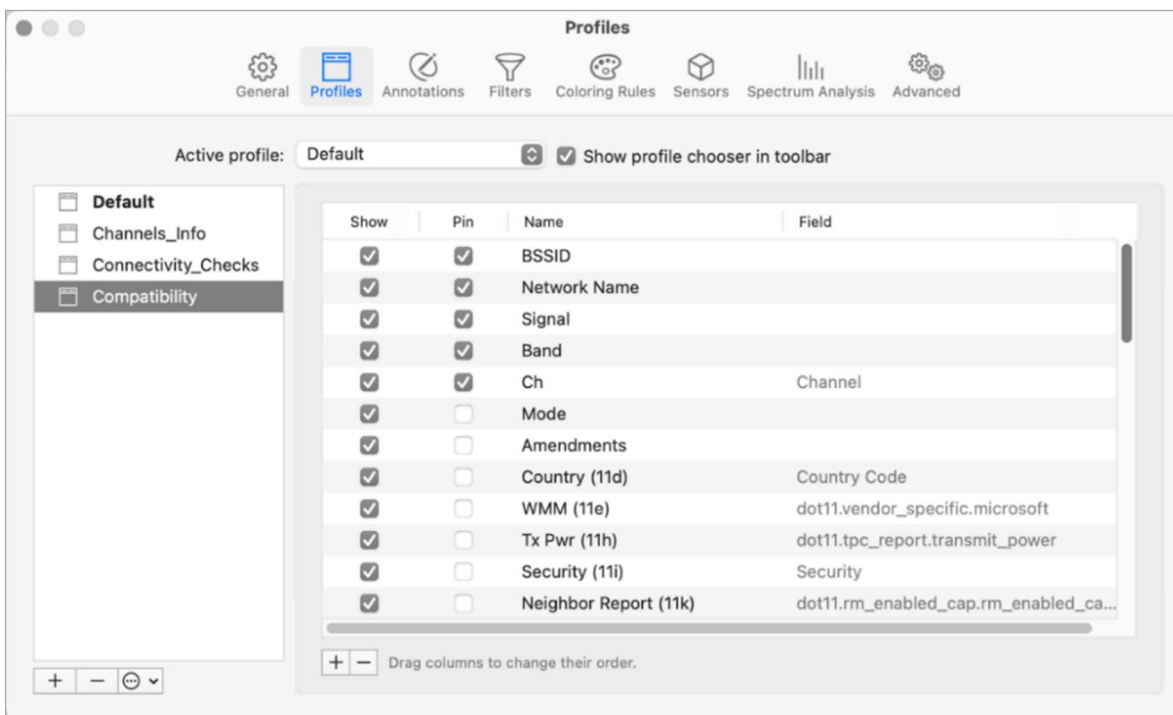


Figure 14-7 - Compatibility profile (1/2)

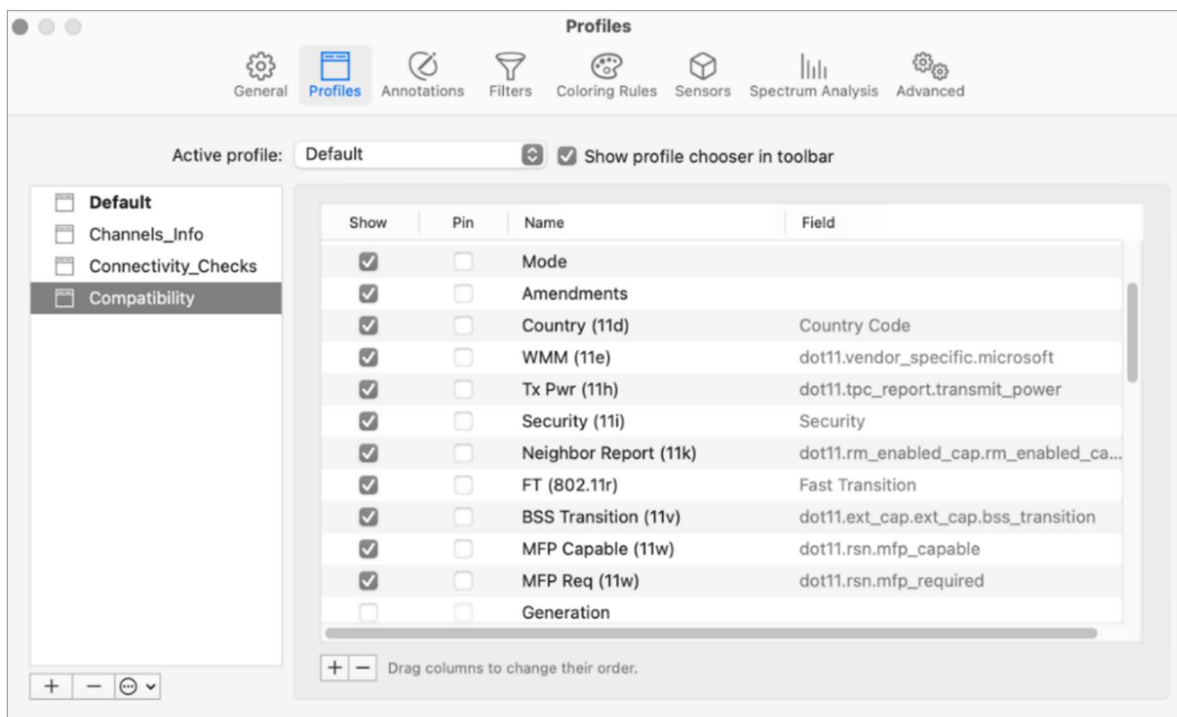


Figure 14-8 - Compatibility profile (2/2)

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

BSSID	Network Name	Signal	Ch	Band	Mode	Amendments	Country (11d)	WMM (11e)	Tx Pwr (11h)	Security (11i)
A8:F7:D9:1A:83:C1	CORP	-51 dBm	1	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:96:91	CORP	-55 dBm	48	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:83:A1	CORP	-56 dBm	36	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:8A:01	CORP	-57 dBm	64	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:90:91	CORP	-59 dBm	36	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:96:B1	CORP	-59 dBm	6	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:8A:21	CORP	-60 dBm	1	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:90:B1	CORP	-61 dBm	1	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:8B:21	CORP	-63 dBm	48	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:95:41	CORP	-64 dBm	60	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:30:B8:71	CORP	-65 dBm	40	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:85:81	CORP	-67 dBm	60	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:8B:41	CORP	-67 dBm	1	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:30:B8:91	CORP	-68 dBm	1	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:85:A1	CORP	-69 dBm	6	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:95:61	CORP	-69 dBm	11	2.4 GHz	g/n/jax	d/e/h/i/j/k/r/l/v	GB	✓	13	WPA2 (802.1X)
A8:F7:D9:1A:8D:C1	CORP	-70 dBm	52	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:5A:F1	CORP	-74 dBm	40	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)
A8:F7:D9:1A:75:31	CORP	-74 dBm	64	5 GHz	a/n/ac/ax	d/e/h/i/j/k/r/l/v	GB	✓	18	WPA2 (802.1X)

Networks Found: 158, Displayed: 30 (18%)

Figure 14-9 - 802.11 feature (amendments) checks (1/2)

BSSID	Network Name	Signal	Ch	Band	Neighbor Report (11k)	FT (802.11r)	BSS Transition...	MFP Capable (11w)	MFP Req (11w)
A8:F7:D9:1A:83:C1	CORP	-51 dBm	1	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:96:91	CORP	-55 dBm	48	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:83:A1	CORP	-56 dBm	36	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:8A:01	CORP	-57 dBm	64	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:90:91	CORP	-59 dBm	36	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:96:B1	CORP	-59 dBm	6	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:8A:21	CORP	-60 dBm	1	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:90:B1	CORP	-61 dBm	1	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:8B:21	CORP	-63 dBm	48	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:95:41	CORP	-64 dBm	60	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:30:B8:71	CORP	-65 dBm	40	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:85:81	CORP	-67 dBm	60	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:8B:41	CORP	-67 dBm	1	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:30:B8:91	CORP	-68 dBm	1	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:85:A1	CORP	-69 dBm	6	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:95:61	CORP	-69 dBm	11	2.4 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:8D:C1	CORP	-70 dBm	52	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:5A:F1	CORP	-74 dBm	40	5 GHz	Enabled	OTD	Supported	No	No
A8:F7:D9:1A:75:31	CORP	-74 dBm	64	5 GHz	Enabled	OTD	Supported	No	No

Networks Found: 158, Displayed: 30 (18%)

Figure 14-10 - 802.11 feature (amendments) checks (2/2)

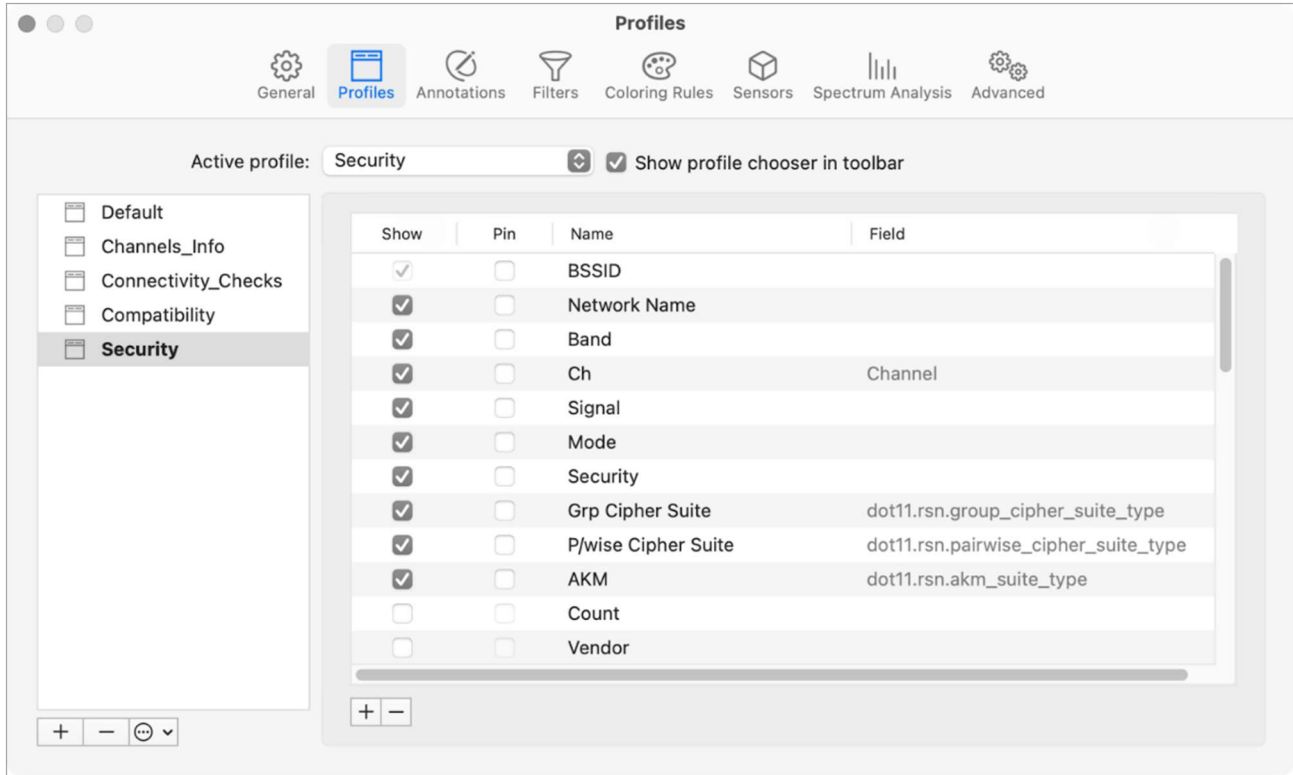


Figure 14-11 - Security profile

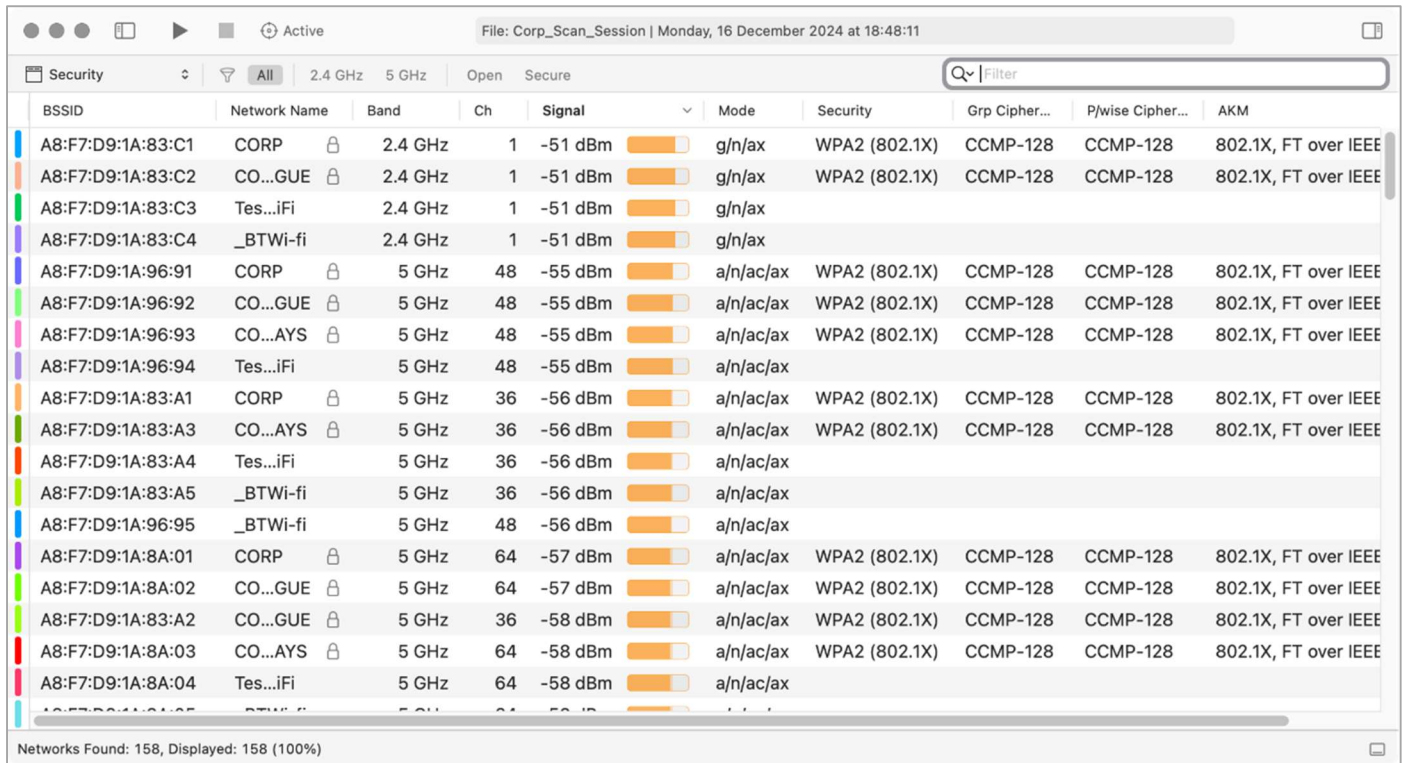


Figure 14-12 - Security check #1

File: Corp\_Scan\_Session2 | Monday, 16 December 2024 at 19:14:40

Security: All | 2.4 GHz | 5 GHz | Open | Secure | Filter

BSSID	Network N...	Band	Ch	Signal	Mode	Security	Grp Cipher Suite	P/wise Cipher Suite	AKM
84:24:8D:BD:9F:00	L...NO	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BD:9F:01	B...NA	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BD:9F:02	V...IUS	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BD:9F:03	LIPARI	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BD:9F:04	M...RE	5 GHz	40	-50 dBm	a/n/ac	WPA/WPA2 (PSK)	TKIP	TKIP, CCMP-128	PSK
84:24:8D:BD:9F:05	S...NA	5 GHz	40	-50 dBm	a/n/ac	WPA2 (802.1X)	CCMP-128	CCMP-128	802.1X
84:24:8D:BD:9F:06	C...NO	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BD:9F:07	M...ZO	5 GHz	40	-50 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BB:15:83	...ree	2.4 GHz	1	-57 dBm	g/n				
84:24:8D:BB:15:80	M...RE	2.4 GHz	1	-58 dBm	g/n	WPA/WPA2 (PSK)	TKIP	TKIP, CCMP-128	PSK
84:24:8D:BB:15:81	B...NA	2.4 GHz	1	-58 dBm	g/n	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BB:15:82	C...RA	2.4 GHz	1	-58 dBm	g/n	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BE:A5:B0	L...NO	5 GHz	44	-60 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BE:A5:B1	B...NA	5 GHz	44	-60 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BE:A5:B2	V...IUS	5 GHz	44	-60 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BE:A5:B3	LIPARI	5 GHz	44	-60 dBm	a/n/ac	WPA2 (PSK)	CCMP-128	CCMP-128	PSK
84:24:8D:BE:A5:B4	M...RE	5 GHz	44	-60 dBm	a/n/ac	WPA/WPA2 (PSK)	TKIP	TKIP, CCMP-128	PSK
84:24:8D:BE:A5:B5	S...NA	5 GHz	44	-60 dBm	a/n/ac	WPA2 (802.1X)	CCMP-128	CCMP-128	802.1X

Networks Found: 177, Displayed: 177 (100%)

Figure 14-13 - Security check #2

Profiles

General | Profiles | Annotations | Filters | Coloring Rules | Sensors | Spectrum Analysis | Advanced

Active profile: Performance | Show profile chooser in toolbar

- Default
- Channels\_Info
- Connectivity\_Checks
- Compatibility
- Security
- Performance**

Show	Pin	Name	Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BSSID	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Network Name	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Signal	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SNR	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Band	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Channel	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Channel Width	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Channel Utilization	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gen	Generation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mode	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Stations	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Streams	

+ - Drag columns to change their order.

Figure 14-14 - Performance profile (1/2)



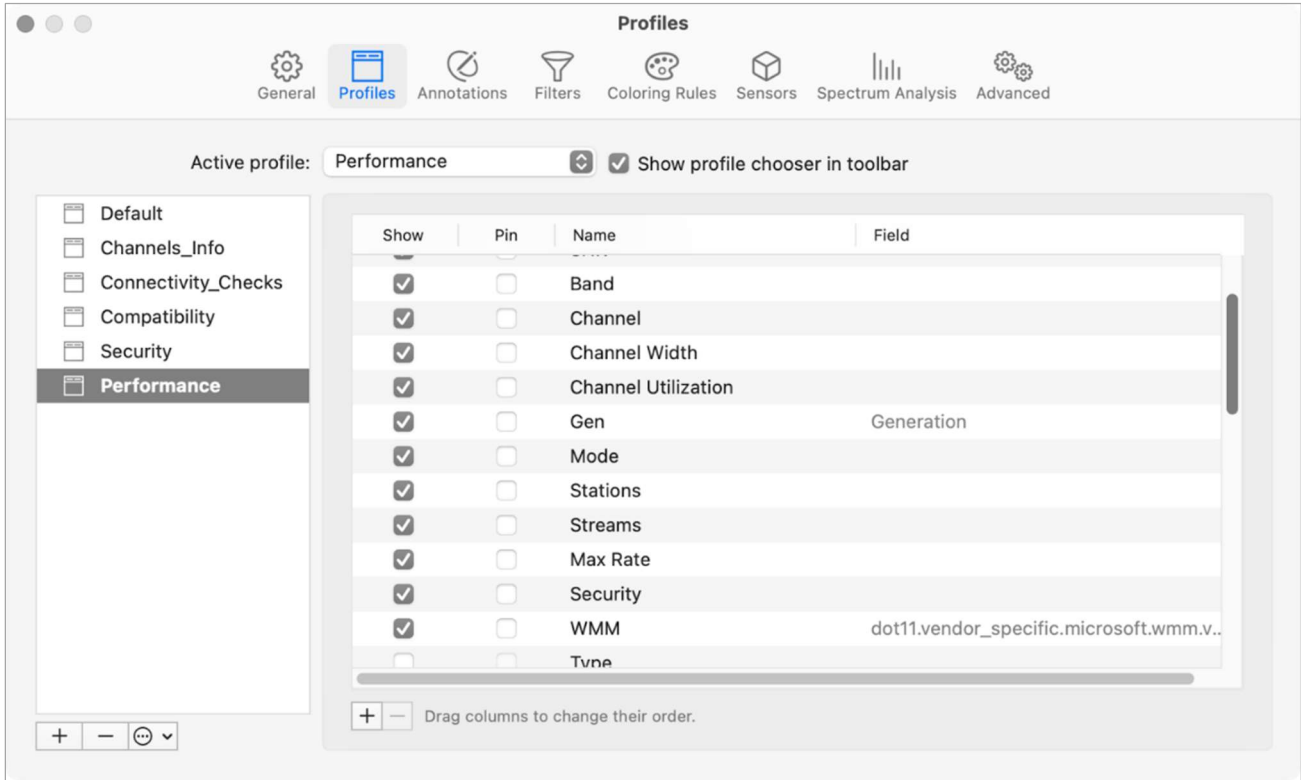


Figure 14-15 - Performance profile (2/2)

The screenshot shows the main interface with the 'Performance' profile active. The table below displays the detected networks:

BSSID	Network Name	Signal	SNR	Band	Cha...	Channel Width	Channel Utilization	Stations	Gen	Mode
A8:F7:D9:1A:83:C1	CORP	-51 dBm	45 dB	2.4 GHz	1	20 MHz	44%	1	6	g/n/ax
A8:F7:D9:1A:83:C2	CO...UE	-51 dBm	45 dB	2.4 GHz	1	20 MHz	44%	0	6	g/n/ax
A8:F7:D9:1A:83:C3	Te...iFi	-51 dBm	45 dB	2.4 GHz	1	20 MHz	44%	2	6	g/n/ax
A8:F7:D9:1A:83:C4	_B...i-fi	-51 dBm	45 dB	2.4 GHz	1	20 MHz	44%	0	6	g/n/ax
A8:F7:D9:1A:96:91	CORP	-55 dBm	41 dB	5 GHz	48	20 MHz	33%	1	6	a/n/ac/ax
A8:F7:D9:1A:96:92	CO...UE	-55 dBm	41 dB	5 GHz	48	20 MHz	33%	0	6	a/n/ac/ax
A8:F7:D9:1A:96:93	CO...YS	-55 dBm	41 dB	5 GHz	48	20 MHz	33%	2	6	a/n/ac/ax
A8:F7:D9:1A:96:94	Te...iFi	-55 dBm	41 dB	5 GHz	48	20 MHz	33%	4	6	a/n/ac/ax
A8:F7:D9:1A:83:A1	CORP	-56 dBm	40 dB	5 GHz	36	20 MHz	15%	1	6	a/n/ac/ax
A8:F7:D9:1A:83:A3	CO...YS	-56 dBm	40 dB	5 GHz	36	20 MHz	15%	1	6	a/n/ac/ax
A8:F7:D9:1A:83:A4	Te...iFi	-56 dBm	40 dB	5 GHz	36	20 MHz	15%	2	6	a/n/ac/ax
A8:F7:D9:1A:83:A5	_B...i-fi	-56 dBm	40 dB	5 GHz	36	20 MHz	15%	0	6	a/n/ac/ax
A8:F7:D9:1A:96:95	_B...i-fi	-56 dBm	40 dB	5 GHz	48	20 MHz	33%	0	6	a/n/ac/ax
A8:F7:D9:1A:8A:01	CORP	-57 dBm	39 dB	5 GHz	64	20 MHz	11%	0	6	a/n/ac/ax
A8:F7:D9:1A:8A:02	CO...UE	-57 dBm	39 dB	5 GHz	64	20 MHz	11%	1	6	a/n/ac/ax
A8:F7:D9:1A:83:A2	CO...UE	-58 dBm	38 dB	5 GHz	36	20 MHz	11%	0	6	a/n/ac/ax
A8:F7:D9:1A:8A:03	CO...YS	-58 dBm	38 dB	5 GHz	64	20 MHz	11%	2	6	a/n/ac/ax
A8:F7:D9:1A:8A:04	Te...iFi	-58 dBm	38 dB	5 GHz	64	20 MHz	11%	11	6	a/n/ac/ax
A8:F7:D9:1A:8A:05	_B...i-fi	-58 dBm	38 dB	5 GHz	64	20 MHz	11%	0	6	a/n/ac/ax

Networks Found: 158, Displayed: 158 (100%)

Figure 14-16 - Performance profile example (1/2)

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

BSSID	Network Name	Signal	Channel Width	Channel Utilization	Stations	Gen	Mode	Streams	Max Rate	WMM
A8:F7:D9:1A:83:C1	CORP	-51 dBm	20 MHz	44%	1	6	g/n/ax	2	286.8 M...	1
A8:F7:D9:1A:83:C2	CO...UE	-51 dBm	20 MHz	44%	0	6	g/n/ax	2	286.8 M...	1
A8:F7:D9:1A:83:C3	Te...iFi	-51 dBm	20 MHz	44%	2	6	g/n/ax	2	286.8 M...	1
A8:F7:D9:1A:83:C4	_B...i-fi	-51 dBm	20 MHz	44%	0	6	g/n/ax	2	286.8 M...	1
A8:F7:D9:1A:96:91	CORP	-55 dBm	20 MHz	33%	1	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:96:92	CO...UE	-55 dBm	20 MHz	33%	0	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:96:93	CO...YS	-55 dBm	20 MHz	33%	2	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:96:94	Te...iFi	-55 dBm	20 MHz	33%	4	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:83:A1	CORP	-56 dBm	20 MHz	15%	1	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:83:A3	CO...YS	-56 dBm	20 MHz	15%	1	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:83:A4	Te...iFi	-56 dBm	20 MHz	15%	2	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:83:A5	_B...i-fi	-56 dBm	20 MHz	15%	0	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:96:95	_B...i-fi	-56 dBm	20 MHz	33%	0	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:8A:01	CORP	-57 dBm	20 MHz	11%	0	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:8A:02	CO...UE	-57 dBm	20 MHz	11%	1	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:83:A2	CO...UE	-58 dBm	20 MHz	11%	0	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:8A:03	CO...YS	-58 dBm	20 MHz	11%	2	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:8A:04	Te...iFi	-58 dBm	20 MHz	11%	11	6	a/n/ac/ax	4	573.5 M...	1
A8:F7:D9:1A:8A:05	_B...i-fi	-58 dBm	20 MHz	11%	0	6	a/n/ac/ax	4	573.5 M...	1

Networks Found: 158, Displayed: 158 (100%)

Figure 14-17 - Performance profile example (2/2)

BSSID	Network Name	Signal	SNR	Band	Cha...	Channel Width	Channel Utilization	Stations	Gen	Mode
> Mist:1A:95:##	_B...iFi	-68 dBm	28 dB	2.4 GHz	11	20 MHz	47%	3	6	g/n/ax
E0:B9:E5:1A:40:F7	Te...afe	-73 dBm	23 dB	2.4 GHz	11	20 MHz		4	6	b/g/n
> Mist:30:AA:##	_B...iFi	-76 dBm	20 dB	2.4 GHz	11	20 MHz	50%	7	6	g/n/ax
48:8F:5A:42:F6:46	JU...fy9	-79 dBm	17 dB	2.4 GHz	11	20 MHz		4	6	g/n
A8:F7:D9:1A:5B:14	_B...i-fi	-80 dBm	16 dB	2.4 GHz	11	20 MHz	26%	0	6	g/n/ax
DE:4B:43:D1:BA:AF	An...lica	-91 dBm	5 dB	2.4 GHz	11	20 MHz		6	6	b/g/n/ax
> Mist:1A:83:##	_B...iFi	-56 dBm	40 dB	5 GHz	36	20 MHz	15%	4	6	a/n/ac/...
> Mist:1A:90:##	_B...iFi	-59 dBm	37 dB	5 GHz	36	20 MHz	17%	10	6	a/n/ac/...
> Mist:30:B8:##	_B...iFi	-65 dBm	31 dB	5 GHz	40	20 MHz	22%	19	6	a/n/ac/...
> Mist:1A:5A:##	_B...iFi	-72 dBm	24 dB	5 GHz	40	20 MHz	17%	11	6	a/n/ac/...
A8:F7:D9:30:BD:E1	CO...YS	-75 dBm	21 dB	5 GHz	40	20 MHz	13%	0	6	a/n/ac/ax
> Mist:1A:86:##	_B...RP	-87 dBm	9 dB	5 GHz	40	20 MHz	24%	1	6	a/n/ac/...
22:61:B4:DD:95:51	Hi...ork	-90 dBm	6 dB	5 GHz	40	80 MHz		5	6	a/n/ac
A8:F7:D9:1A:87:F1	CORP	-92 dBm	4 dB	5 GHz	40	20 MHz	12%	1	6	a/n/ac/ax
A8:F7:D9:1A:88:51	CO...YS	-67 dBm	29 dB	5 GHz	44	20 MHz	13%	0	6	a/n/ac/ax
A8:F7:D9:1A:85:B1	CO...YS	-74 dBm	22 dB	5 GHz	44	20 MHz	13%	3	6	a/n/ac/ax
> Mist:30:BD:##	_B...iFi	-76 dBm	20 dB	5 GHz	44	20 MHz	13%	24	6	a/n/ac/...
48:8F:5A:42:F6:45	JU...fy9	-77 dBm	19 dB	5 GHz	44	20 MHz		5	6	a/n/ac
> Mist:1A:64:##	_B...iFi	-86 dBm								

Networks Found: 158, Displayed: 158 (100%)

Figure 14-18 - Performance profile example - consolidated, per radio view



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

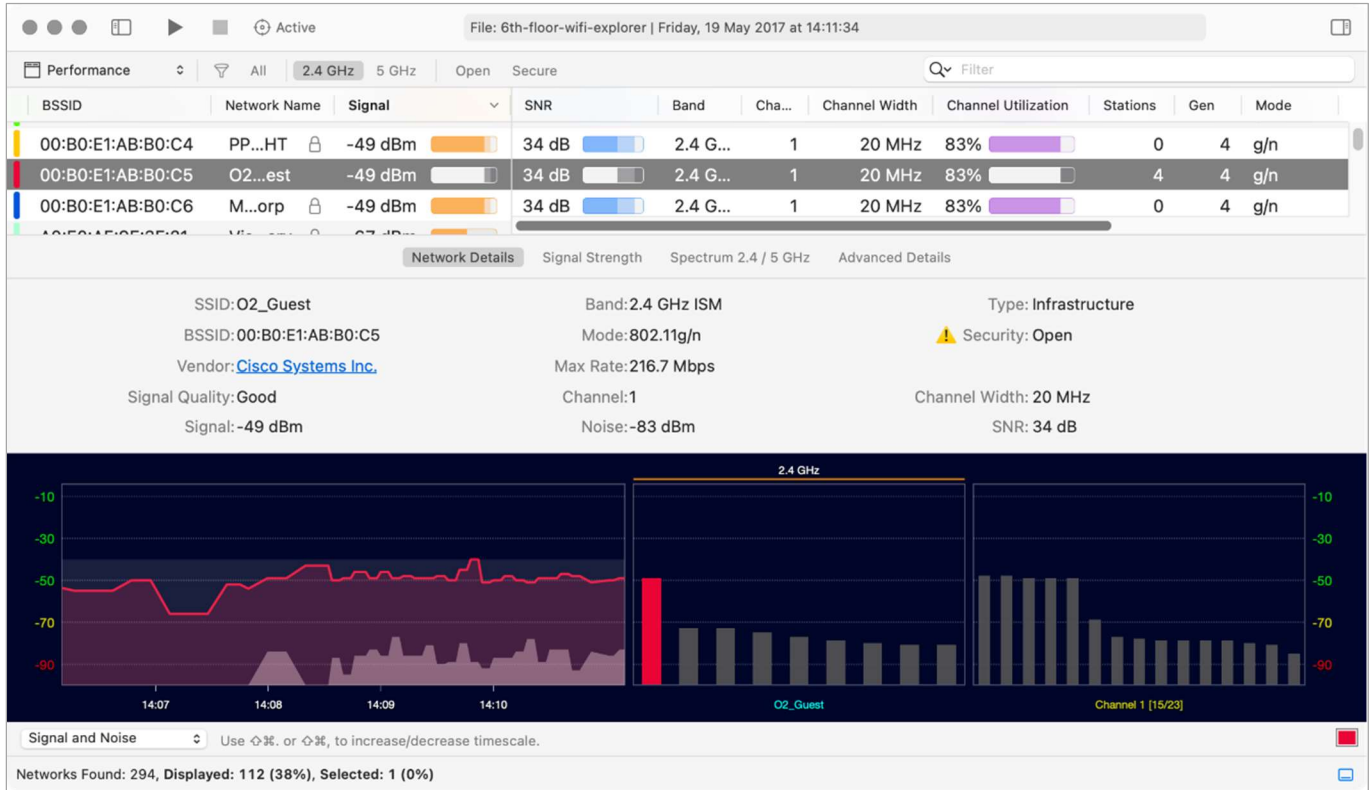


Figure 14-19 - Network Details view for an SSID under investigation

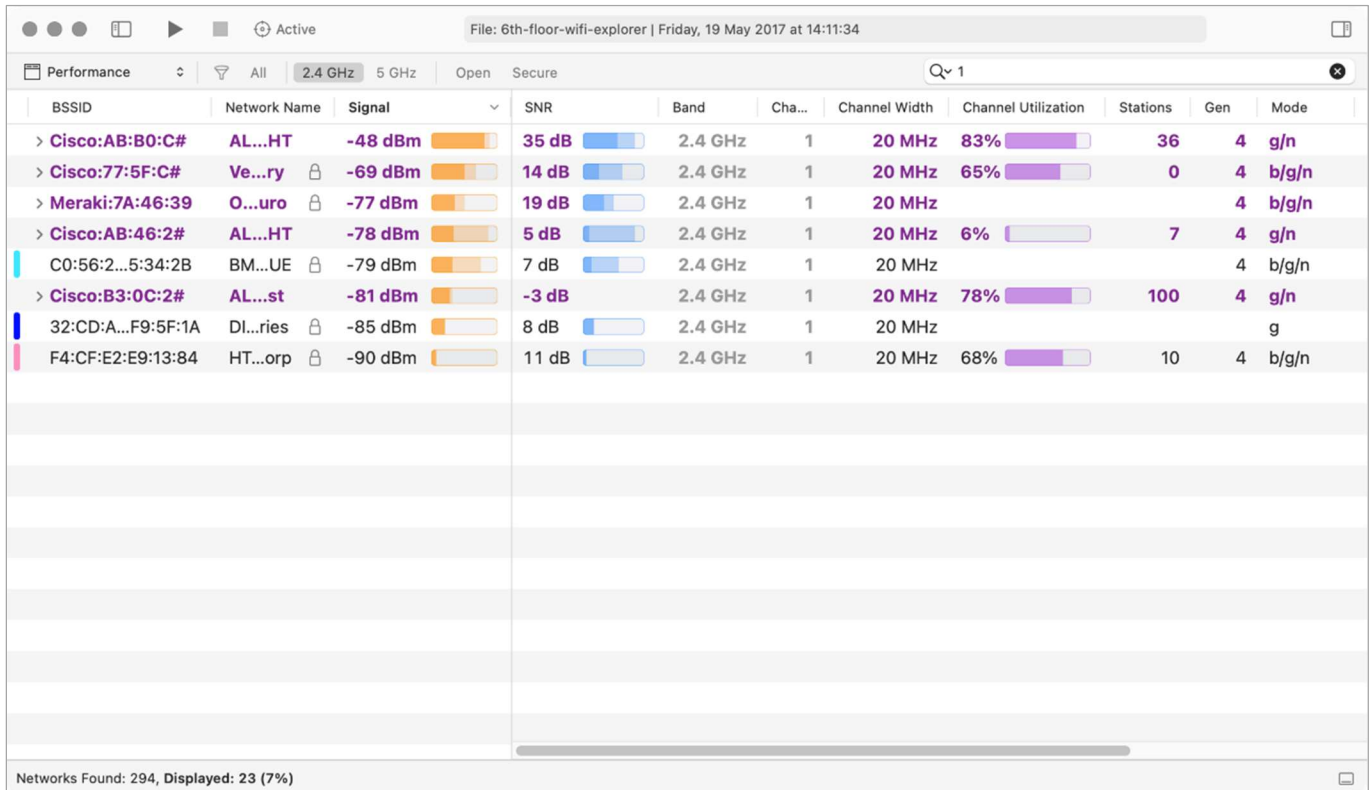


Figure 14-20 - Consolidated view using View > Organize Networks By Access Point Radio

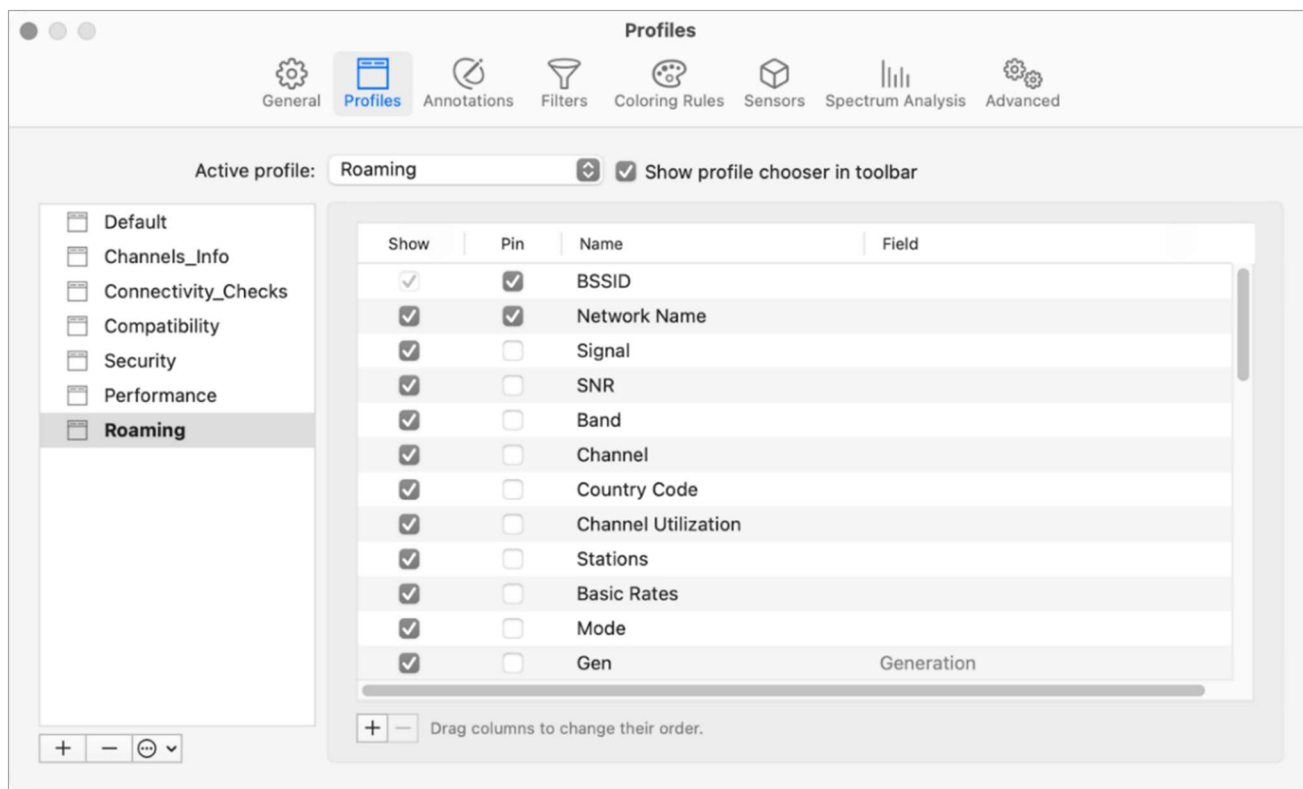


Figure 14-21 - Roaming profile (1/2)

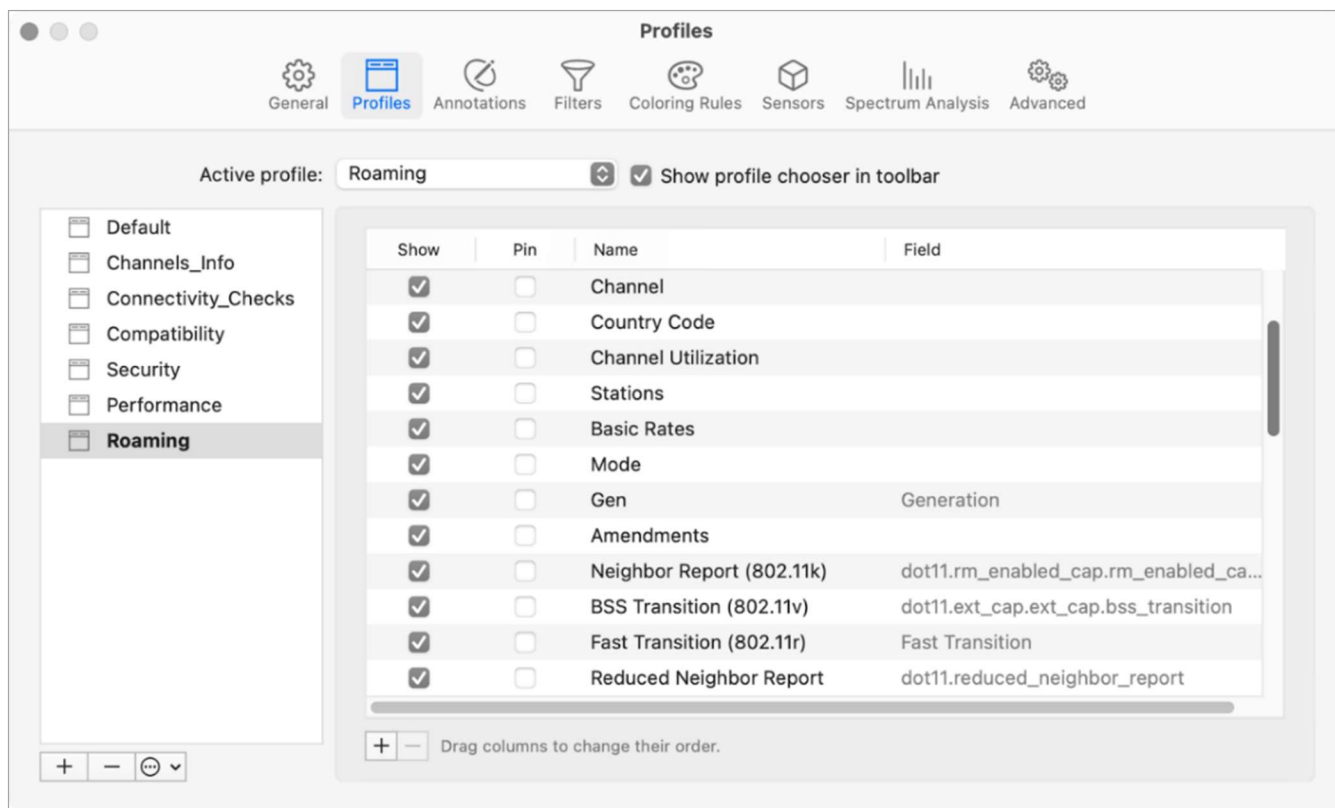


Figure 14-22 - Roaming profile (2/2)

# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

BSSID	Network Name	Signal	SNR	Band	Cha...	Country...	Channel Utilization	Stations	Basic Rates	Mode
A8:F7:D9:1A:96:91	CORP	-55 dBm	41 dB	5 GHz	48	GB	33%	1	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:83:A1	CORP	-56 dBm	40 dB	5 GHz	36	GB	15%	1	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:8A:01	CORP	-57 dBm	39 dB	5 GHz	64	GB	11%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:90:91	CORP	-59 dBm	37 dB	5 GHz	36	GB	17%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:8B:21	CORP	-63 dBm	33 dB	5 GHz	48	GB	34%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:95:41	CORP	-64 dBm	32 dB	5 GHz	60	GB	29%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:30:B8:71	CORP	-65 dBm	31 dB	5 GHz	40	GB	22%	1	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:85:81	CORP	-67 dBm	29 dB	5 GHz	60	GB	24%	4	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:8D:C1	CORP	-70 dBm	26 dB	5 GHz	52	GB	15%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:5A:F1	CORP	-74 dBm	22 dB	5 GHz	40	GB	17%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:86:D1	CORP	-74 dBm	22 dB	5 GHz	56	GB	5%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:75:31	CORP	-74 dBm	22 dB	5 GHz	64	GB	12%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:30:AA:91	CORP	-75 dBm	21 dB	5 GHz	48	GB	39%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:90:F1	CORP	-76 dBm	20 dB	5 GHz	36	GB	15%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:30:BD:51	CORP	-76 dBm	20 dB	5 GHz	44	GB	13%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:30:BC:01	CORP	-76 dBm	20 dB	5 GHz	52	GB	13%	0	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:81:91	CORP	-83 dBm	13 dB	5 GHz	52	GB	16%	19	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:86:41	CORP	-87 dBm	9 dB	5 GHz	40	GB	24%	0	12, 24 Mbps	a/n/ac/ax

Networks Found: 158, Displayed: 21 (13%)

Figure 14-23 - Networks table with Roaming profile applied (1/2)

BSSID	Network Name	Stations	Basic Rates	Mode	Gen	Amendments	Neighbor Report	BSS Transition	Fast Trans...	Reduced Neigh...
A8:F7:D9:1A:96:91	CORP	1	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:83:A1	CORP	1	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:8A:01	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:90:91	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:8B:21	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:95:41	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:30:B8:71	CORP	1	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:85:81	CORP	4	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:8D:C1	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:5A:F1	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:75:31	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:86:D1	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:30:AA:91	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:90:F1	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:30:BC:01	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:30:BD:51	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:81:91	CORP	19	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:64:21	CORP	1	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	
A8:F7:D9:1A:86:41	CORP	0	12, 24 Mbps	a/n/ac/ax	6	d/e/h/j/i/k/r/v	Enabled	Supported	OTD	

Networks Found: 158, Displayed: 21 (13%)

Figure 14-24 - Networks table with Roaming profile applied (2/2)

BSSID	Network Name	Signal	SNR	Band	Cha...	Country...	Channel Utilization	Stations	Basic Rates	Mode
> Mist:1A:96:##	_B...iFi	-55 dBm	41 dB	5 GHz	48	GB	33%	7	12, 24 Mbps	a/n/ac/..
> Mist:1A:83:##	_B...iFi	-56 dBm	40 dB	5 GHz	36	GB	15%	4	12, 24 Mbps	a/n/ac/..
> Mist:1A:8A:##	_B...iFi	-57 dBm	39 dB	5 GHz	64	GB	11%	16	12, 24 Mbps	a/n/ac/..
> Mist:1A:90:##	_B...iFi	-59 dBm	37 dB	5 GHz	36	GB	17%	10	12, 24 Mbps	a/n/ac/..
> Mist:1A:8B:##	_B...iFi	-63 dBm	33 dB	5 GHz	48	GB	34%	9	12, 24 Mbps	a/n/ac/..
A8:F7:D9:1A:85:51	C...AYS	-63 dBm	33 dB	5 GHz	56	GB	6%	7	12, 24 Mbps	a/n/ac/ax
> Mist:1A:95:##	_B...iFi	-63 dBm	33 dB	5 GHz	60	GB	29%	8	12, 24 Mbps	a/n/ac/..
> Mist:30:B8:##	_B...iFi	-65 dBm	31 dB	5 GHz	40	GB	22%	19	12, 24 Mbps	a/n/ac/..
A8:F7:D9:1A:80:11	C...AYS	-66 dBm	30 dB	5 GHz	52	GB	15%	14	12, 24 Mbps	a/n/ac/ax
A8:F7:D9:1A:88:51	C...AYS	-67 dBm	29 dB	5 GHz	44	GB	13%	0	12, 24 Mbps	a/n/ac/ax
> Mist:1A:85:##	_B...iFi	-67 dBm	29 dB	5 GHz	60	GB	24%	17	12, 24 Mbps	a/n/ac/..
A8:F7:D9:1A:82:51	C...AYS	-67 dBm	29 dB	5 GHz	64	GB	14%	51	12, 24 Mbps	a/n/ac/ax
> Mist:1A:8D:##	_B...iFi	-68 dBm	28 dB	5 GHz	52	GB	15%	2	12, 24 Mbps	a/n/ac/..
> Mist:1A:5A:##	_B...iFi	-72 dBm	24 dB	5 GHz	40	GB	17%	11	12, 24 Mbps	a/n/ac/..
A8:F7:D9:1A:85:B1	C...AYS	-74 dBm	22 dB	5 GHz	44	GB	13%	3	12, 24 Mbps	a/n/ac/ax
> Mist:1A:86:##	_B...iFi	-74 dBm	22 dB	5 GHz	56	GB	5%	10	12, 24 Mbps	a/n/ac/..
> Mist:1A:75:##	_B...iFi	-74 dBm	22 dB	5 GHz	64	GB	12%	5	12, 24 Mbps	a/n/ac/..
A8:F7:D...30:BD:E1	C...AYS	-75 dBm	21 dB	5 GHz	40	GB	13%	0	12, 24 Mbps	a/n/ac/ax

Networks Found: 158, Displayed: 108 (68%)

Figure 14-25 - Networks table organized by AP radio with Roaming profile applied

# Chapter 15 - Data Export & Reporting

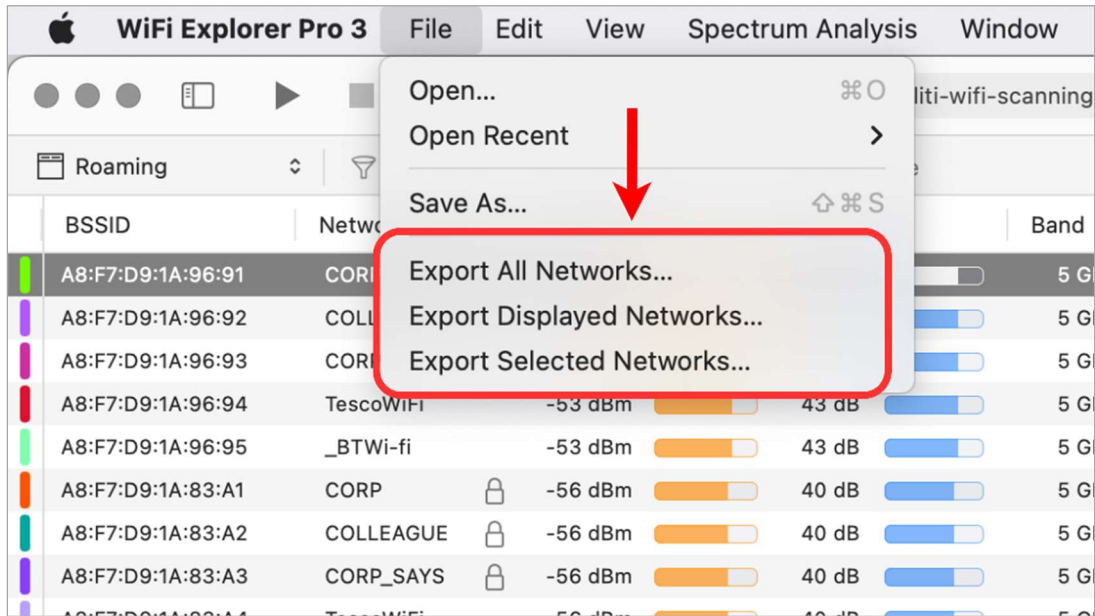


Figure 15-1: Export options available via the *File* menu

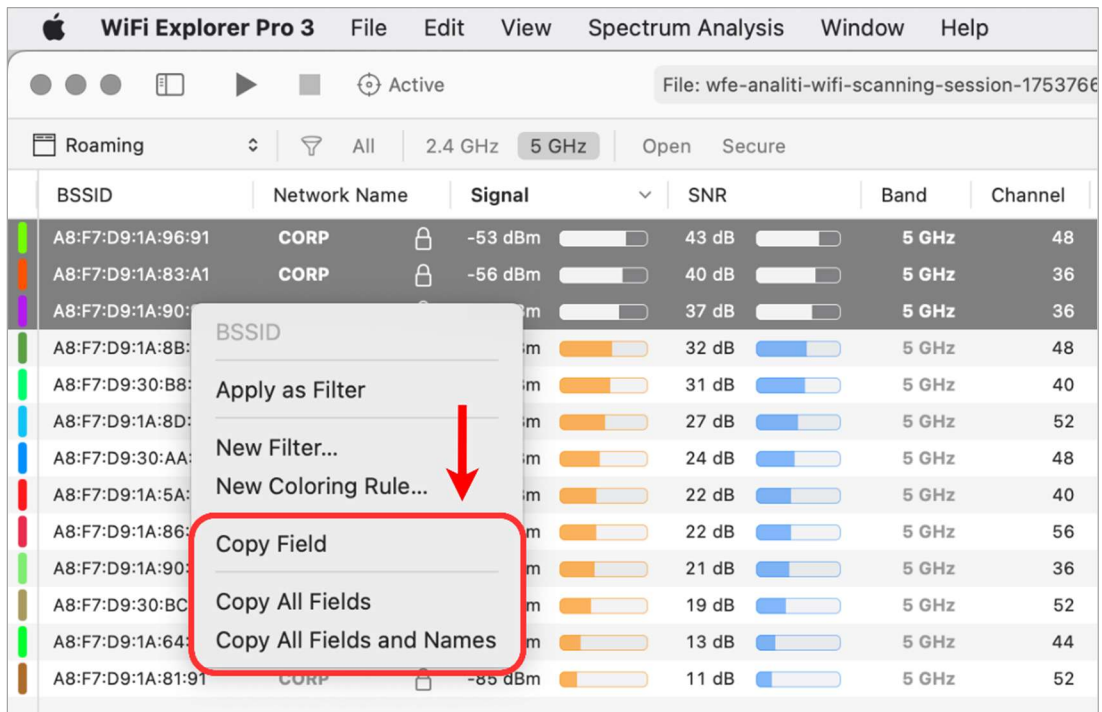


Figure 15-2: Copy options available via Control-click



# WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

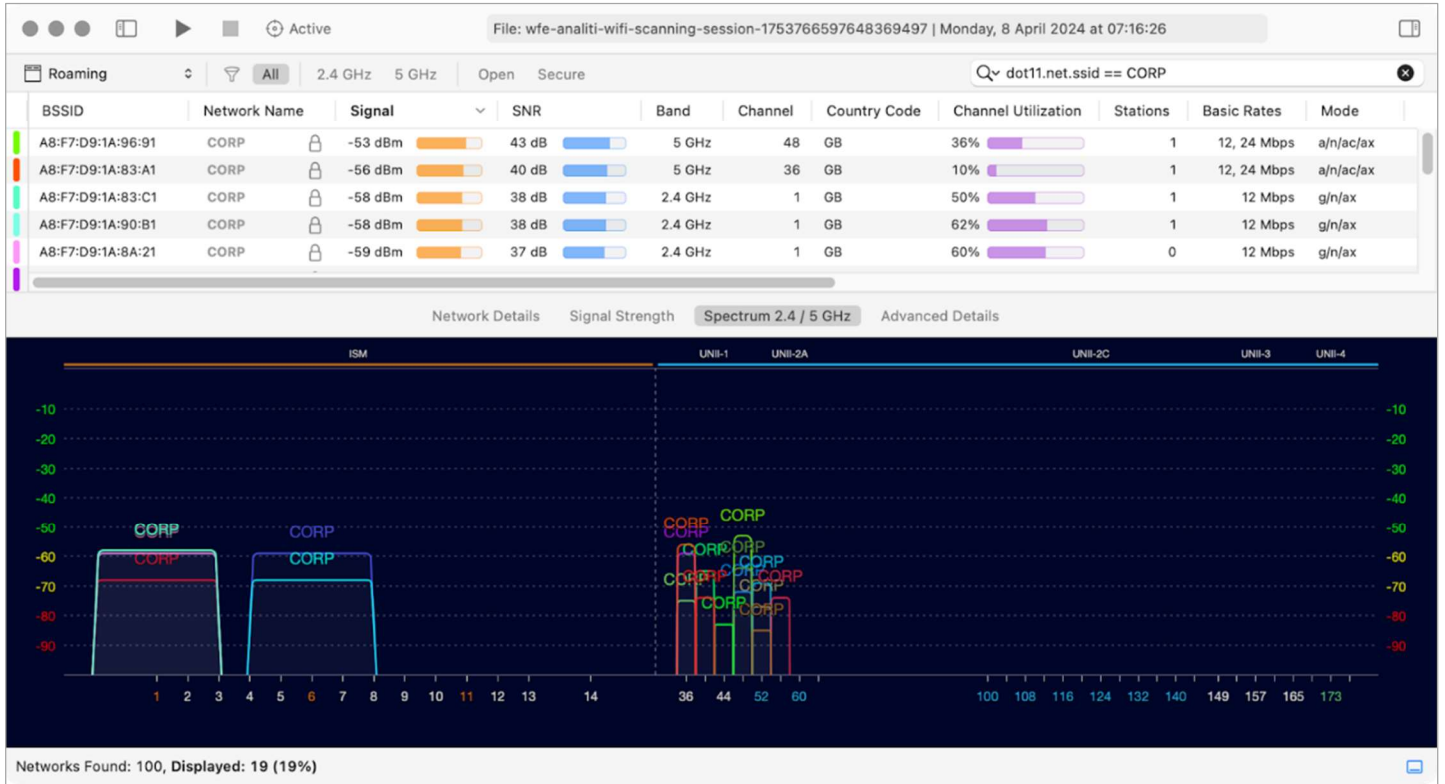


Figure 15-3: Spectrum 2.4/5 GHz panel used for drag and drop



Figure 15-4: Resulting image from panel image drag and drop



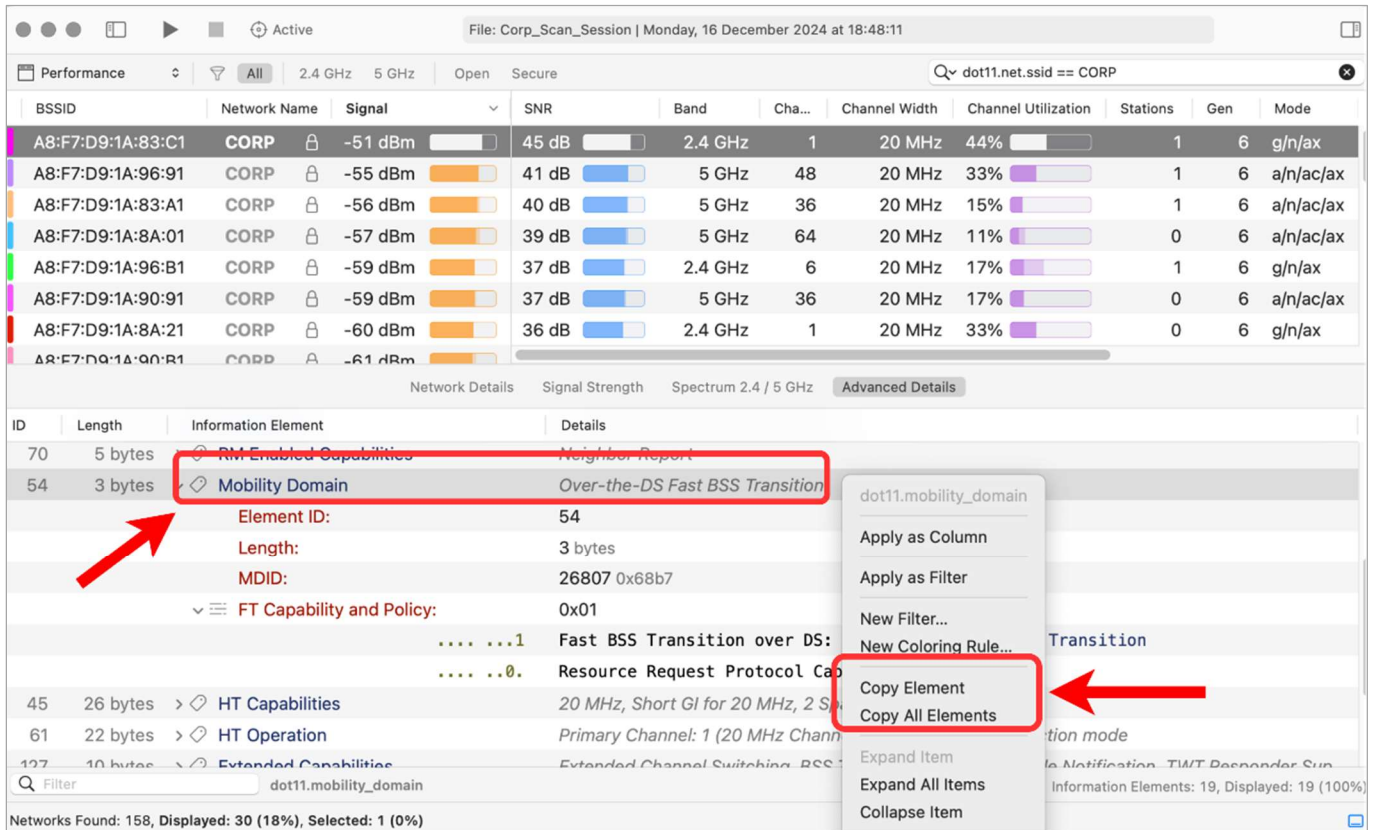


Figure 15-5: Information element data copy options

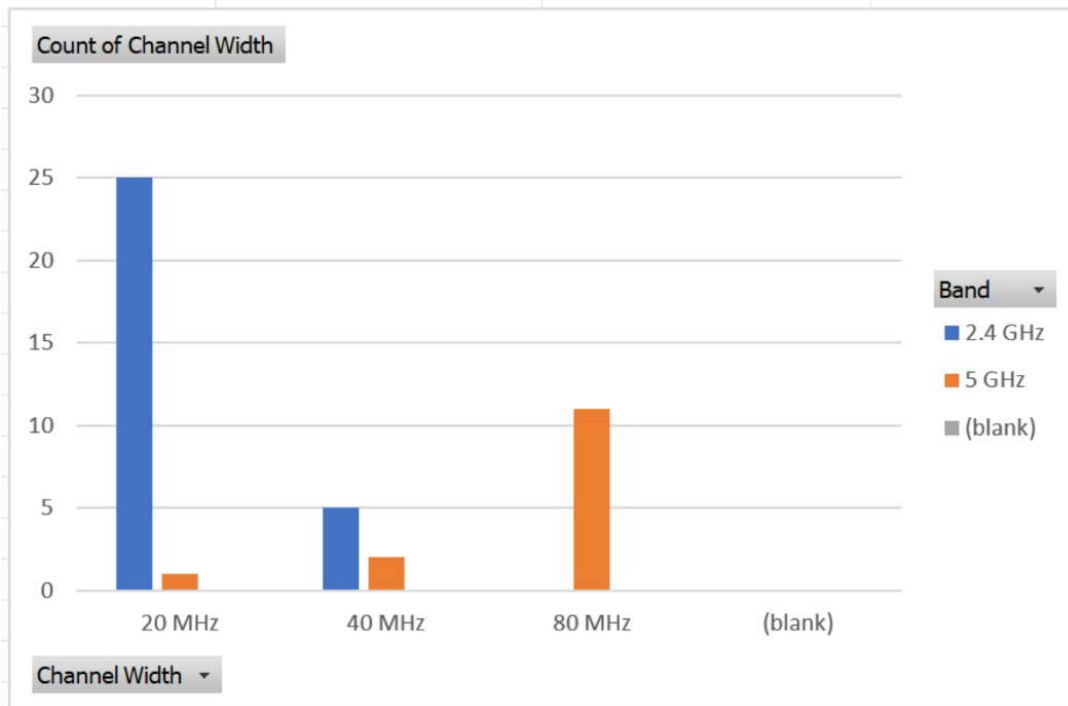


Figure 15-6 - Sample report created from CSV data using Excel

## **Chapter 16 - RF Environment Auditing**

No screenshots.

## Chapter 17 - Raspberry Pi Sensor



Figure 17-1 - microSD reader (USB-A) with microSD card

**Install Raspberry Pi OS using Raspberry Pi Imager**

Raspberry Pi Imager is the quick and easy way to install Raspberry Pi OS and other operating systems to a microSD card, ready to use with your Raspberry Pi.

Download and install Raspberry Pi Imager to a computer with an SD card reader. Put the SD card you'll use with your Raspberry Pi into the reader and run Raspberry Pi Imager.

[Download for macOS](#)

[Download for Windows](#)

[Download for Ubuntu for x86](#)

```
To install on Raspberry Pi OS, type  
sudo apt install rpi-imager  
in a Terminal window.
```

The screenshot shows the Raspberry Pi Imager v1.8.1 application window. It features the Raspberry Pi logo and the text 'Raspberry Pi'. Below this, there are three sections: 'Raspberry Pi Device' with a 'CHOOSE DEVICE' button, 'Operating System' with a 'CHOOSE OS' button, and 'Storage' with a 'CHOOSE STORAGE' button. A 'NEXT' button is located at the bottom right of the interface.

Figure 17-2 - Screenshot of Raspberry Pi Imager download page

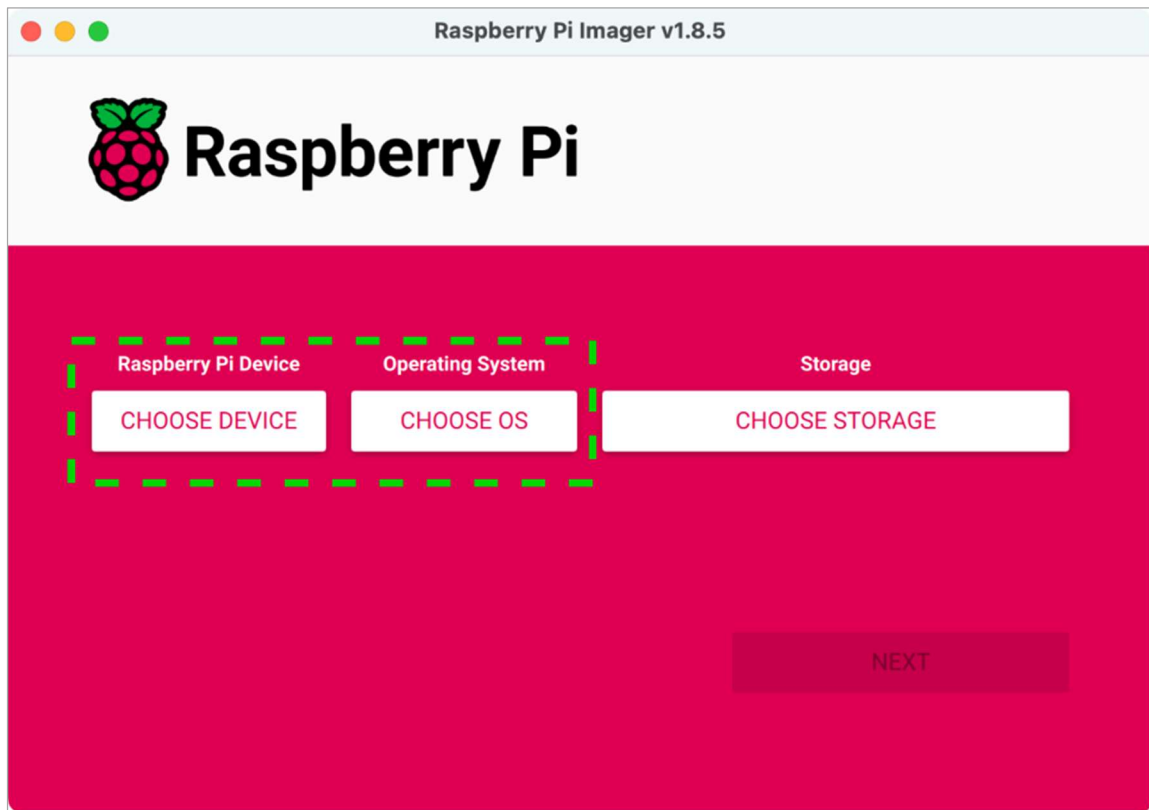


Figure 17-3 - Choose device & OS

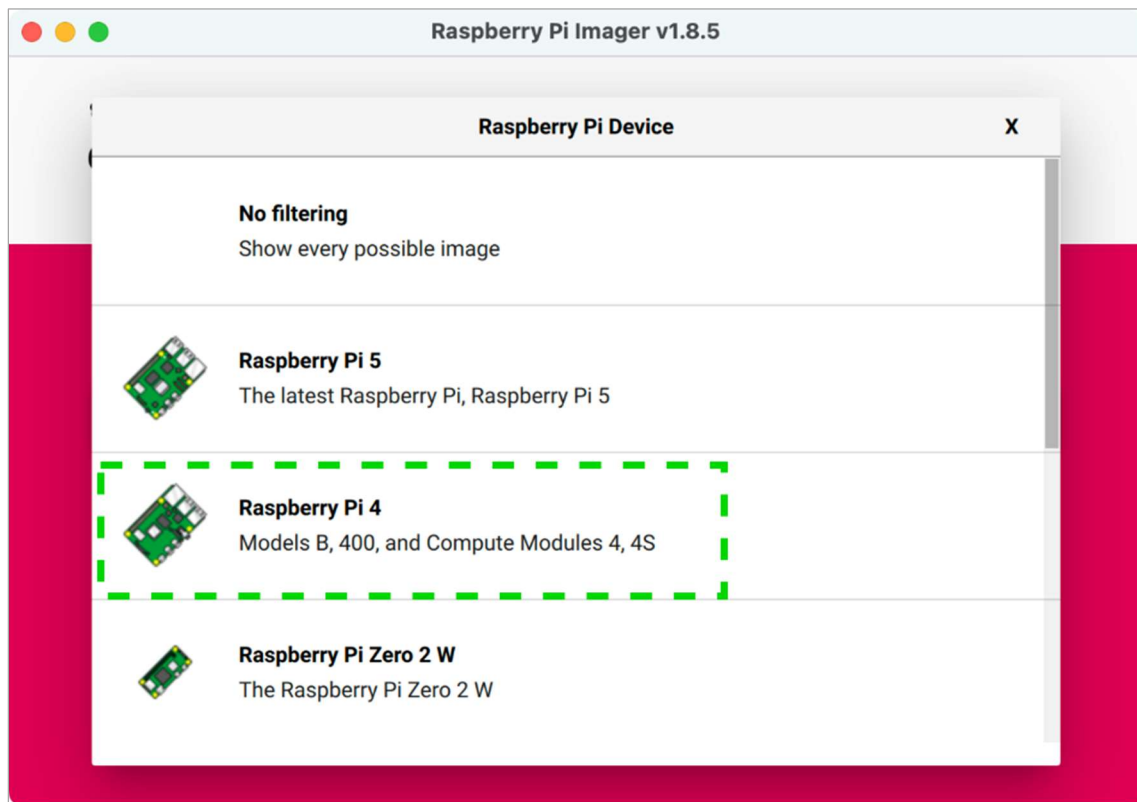


Figure 17-4 – Select the RPi4 (or your particular model)

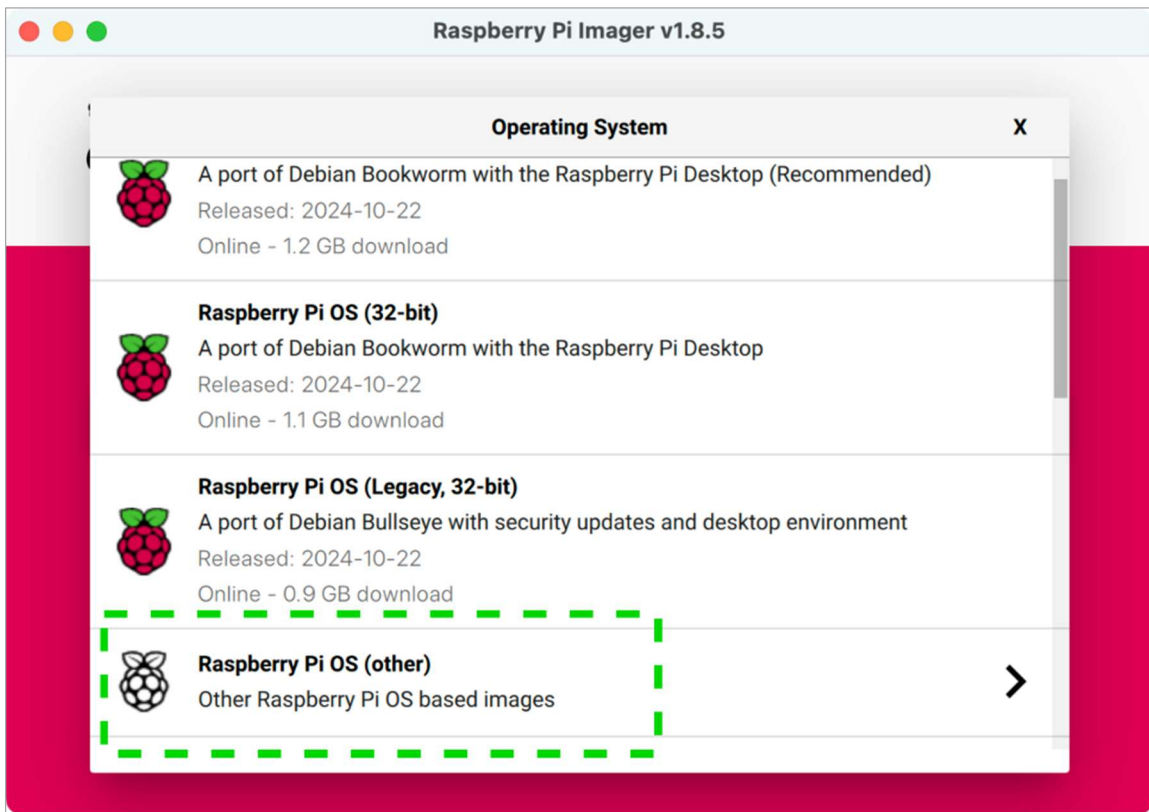


Figure 17-5 – Select the “Raspberry Pi OS (other)” option

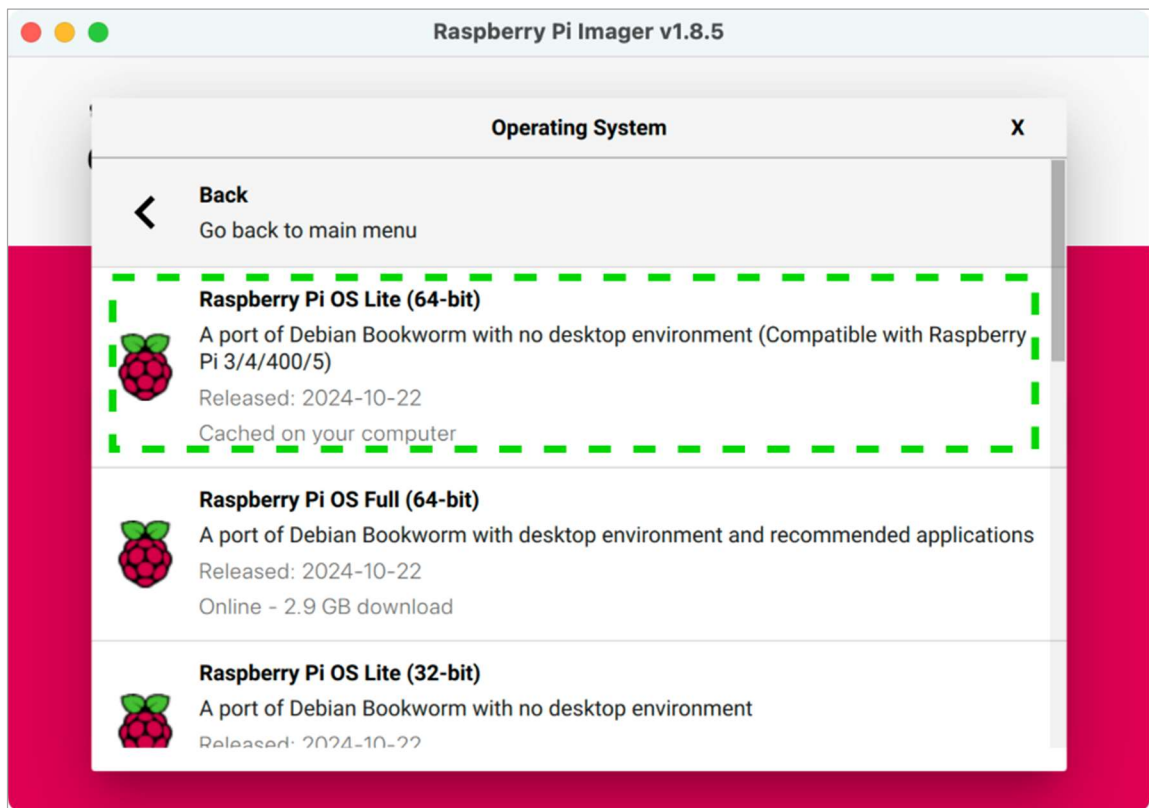


Figure 17-6 – Select the “Raspberry Pi OS Lite” option (no desktop required)

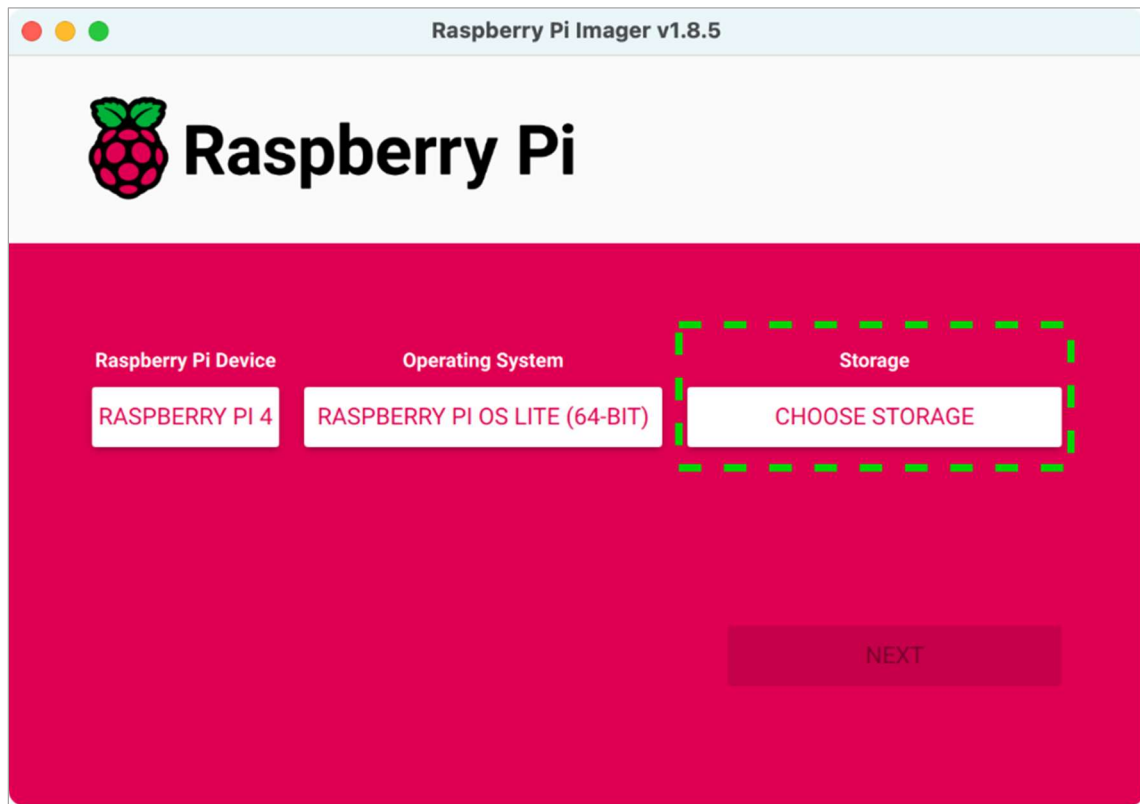


Figure 17-7 – Identify location of microSD to burn

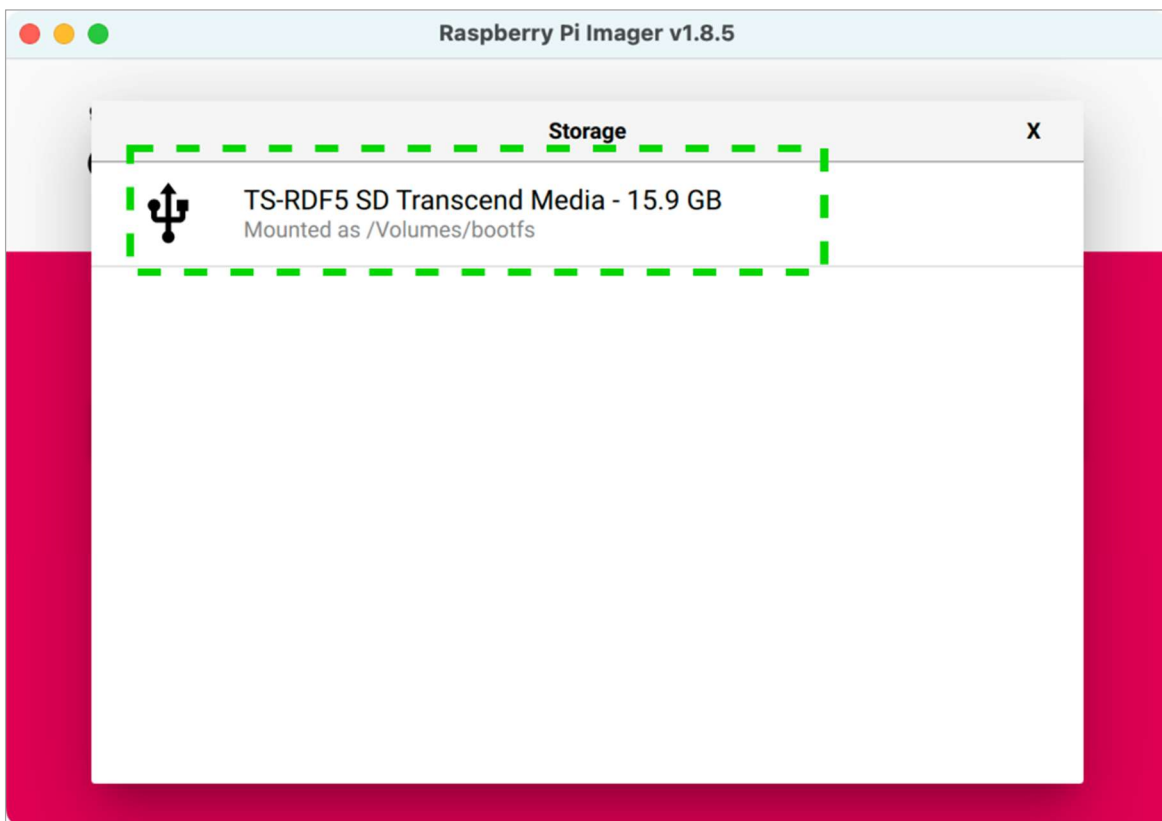


Figure 17-8 – Select the microSD card



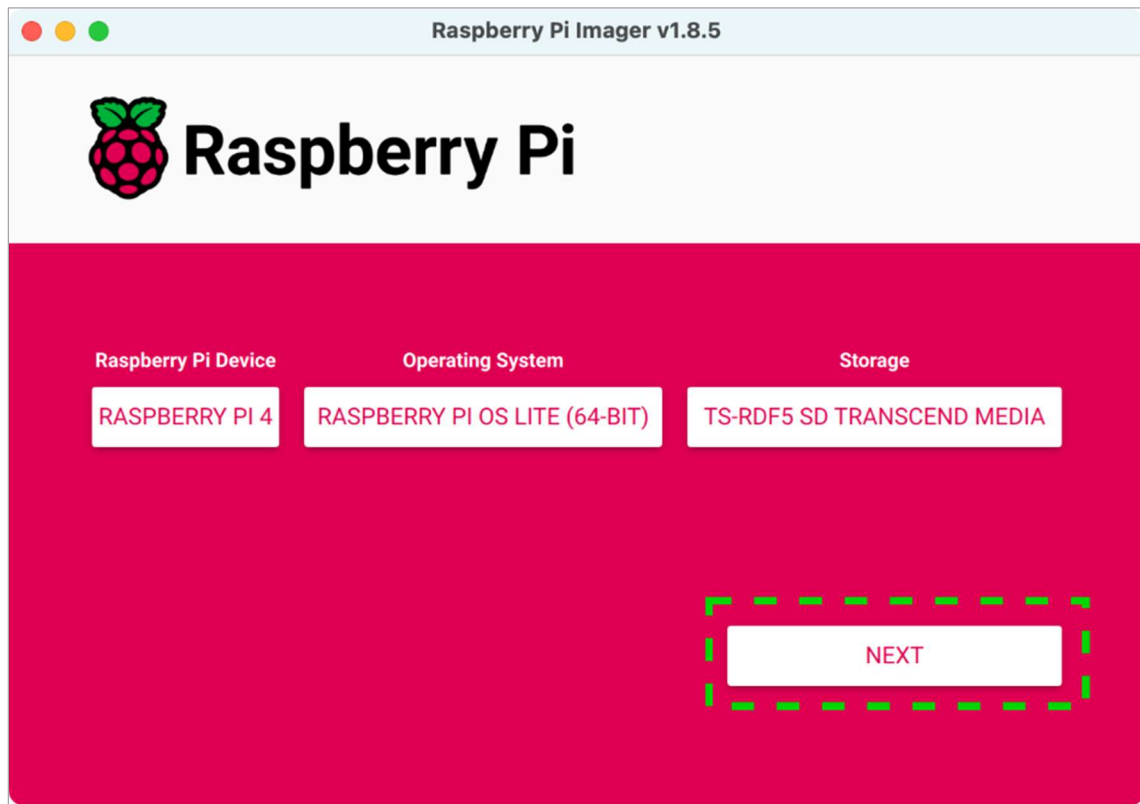


Figure 17-9 – Hit next

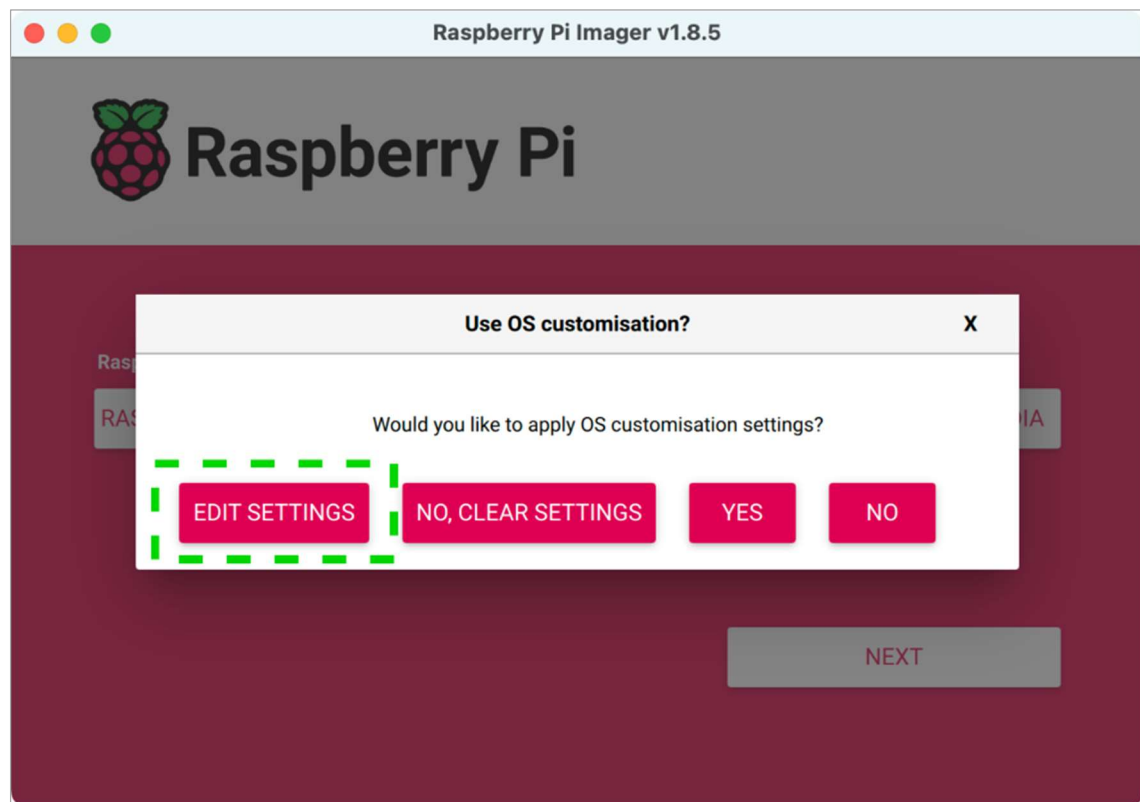


Figure 17-10 – Edit the OS customization settings

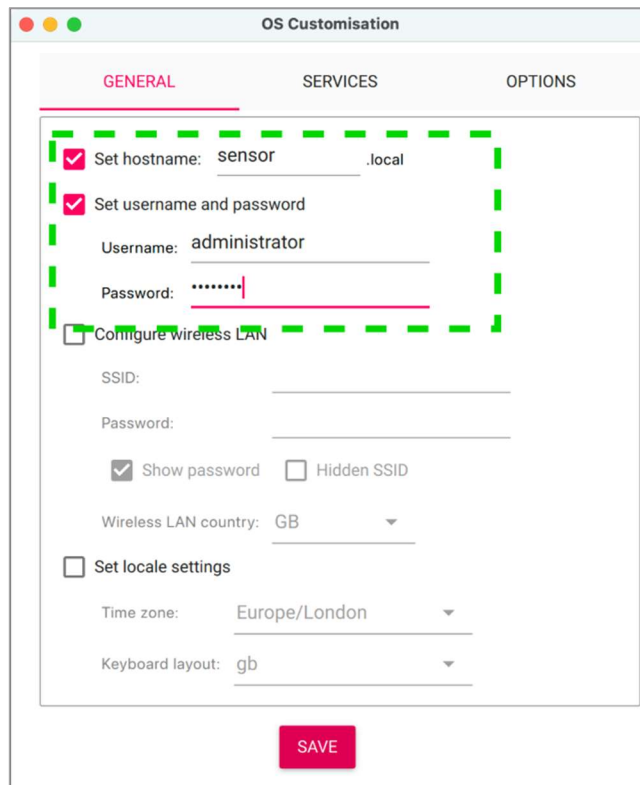


Figure 17-11 – Give the sensor a name and an administrative username and password

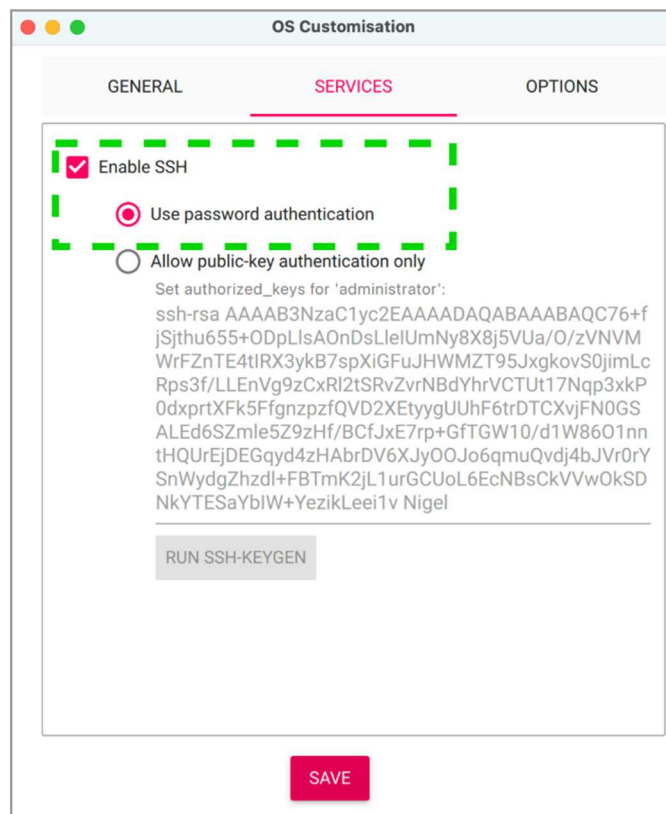


Figure 17-12 – Enable SSH for remote access to the sensor

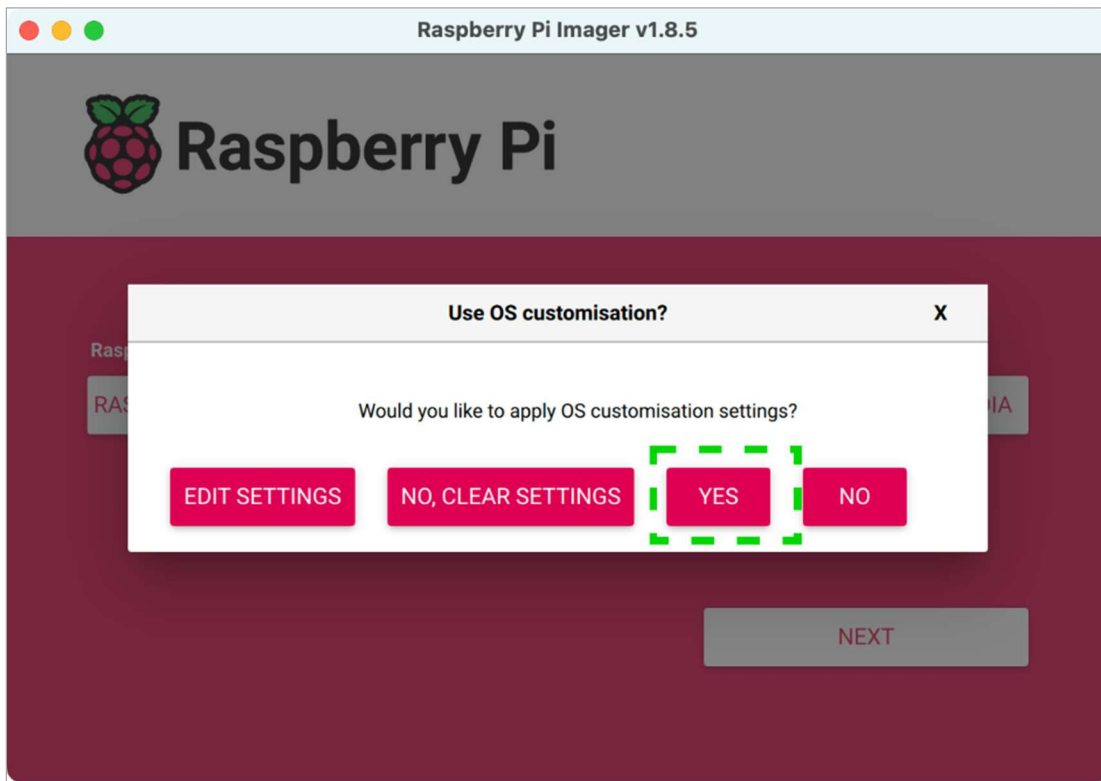


Figure 17-13 – Apply the OS settings updates

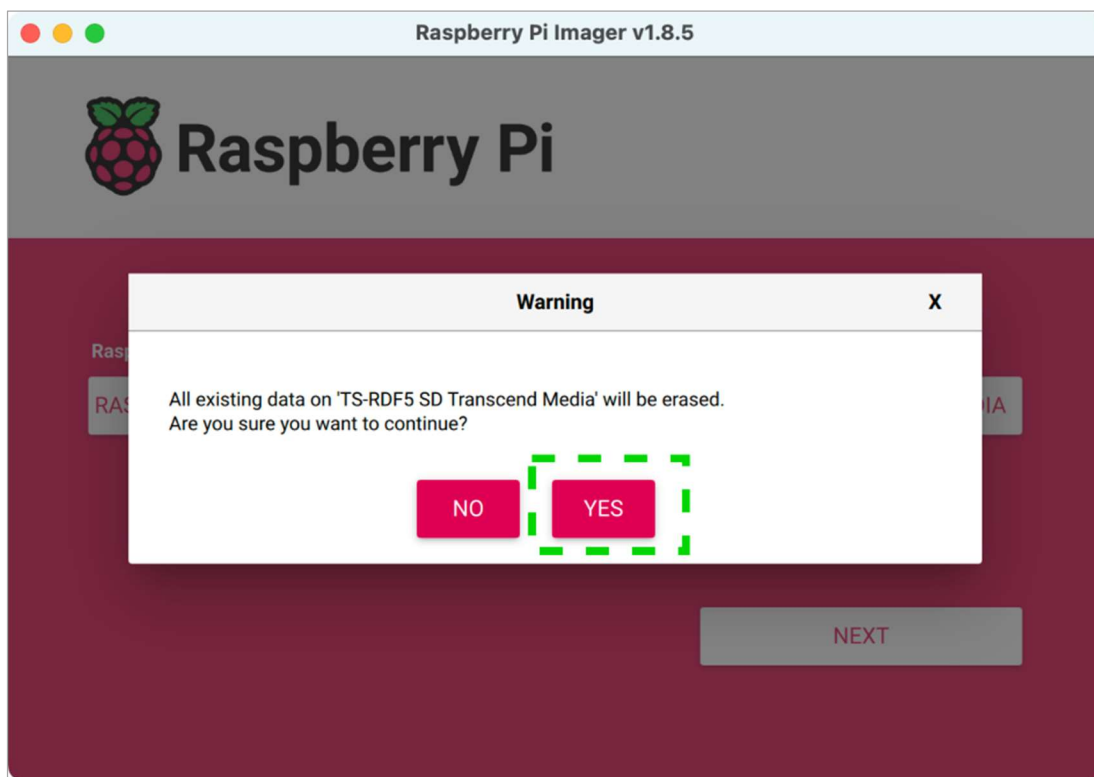


Figure 17-14 – Confirm that the burn process can begin

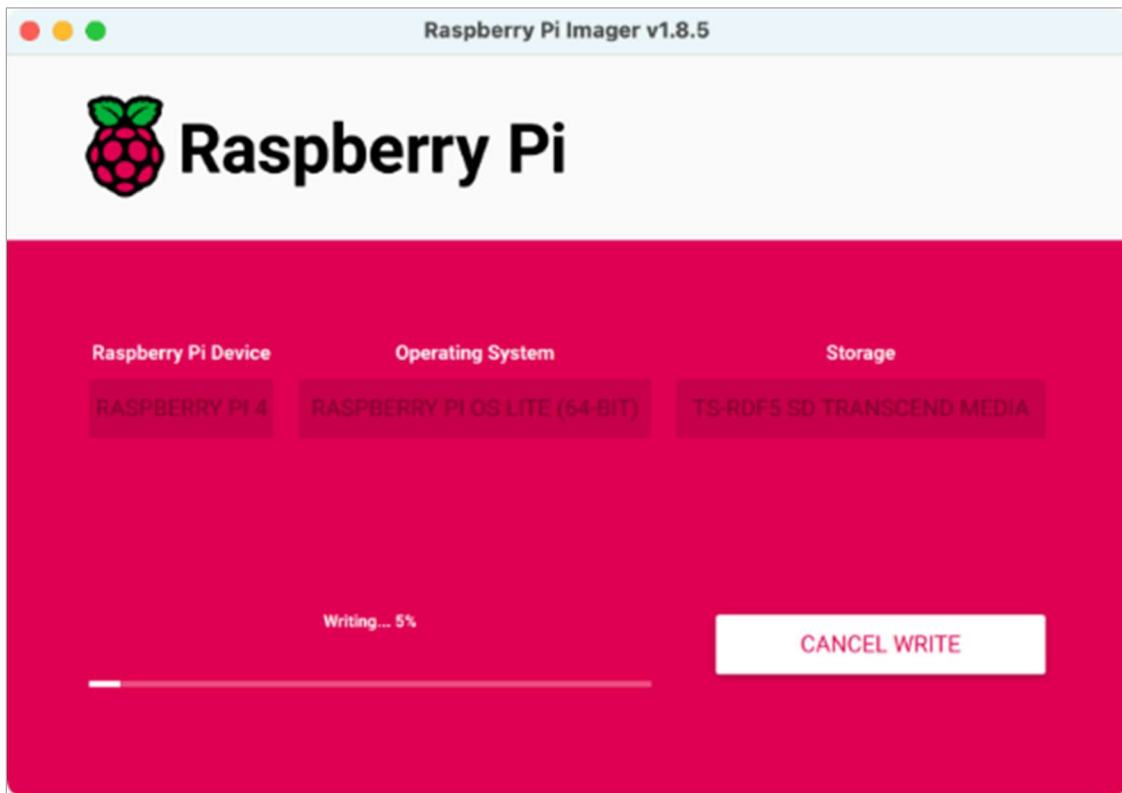


Figure 17-15 – The image is written to the microSD card

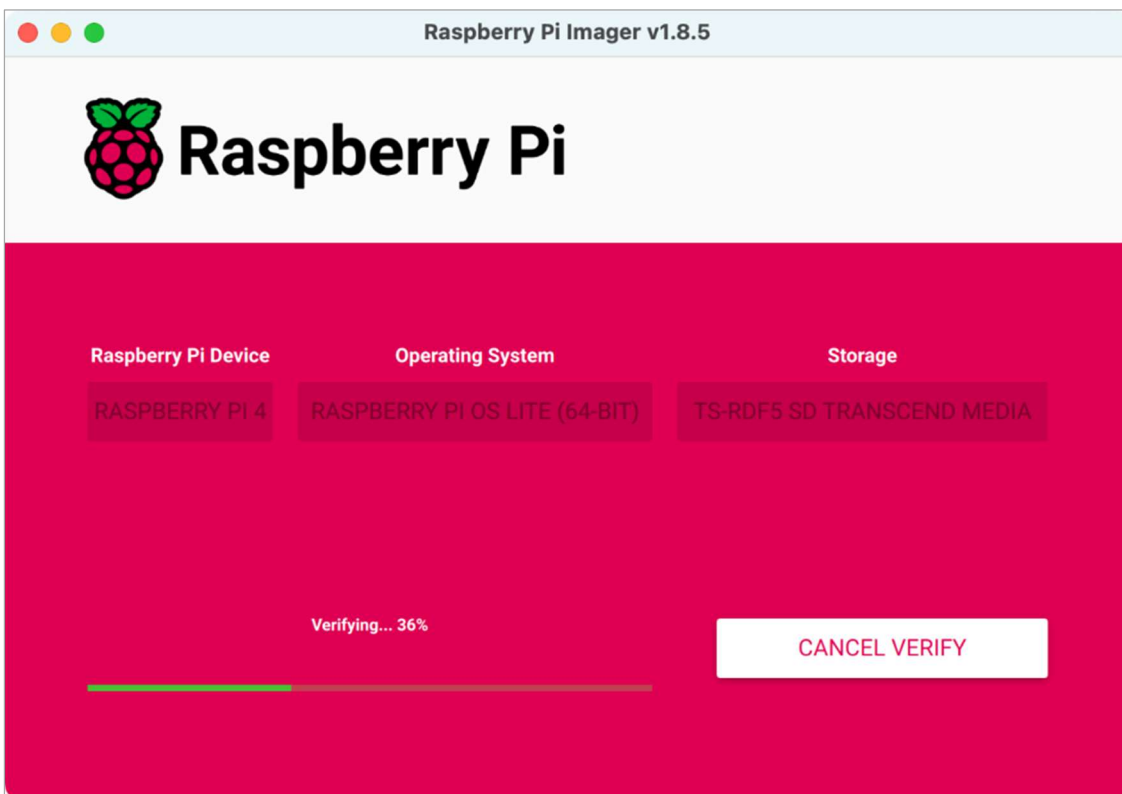


Figure 17-16 – The new image is verified to ensure it was correctly written to the microSD

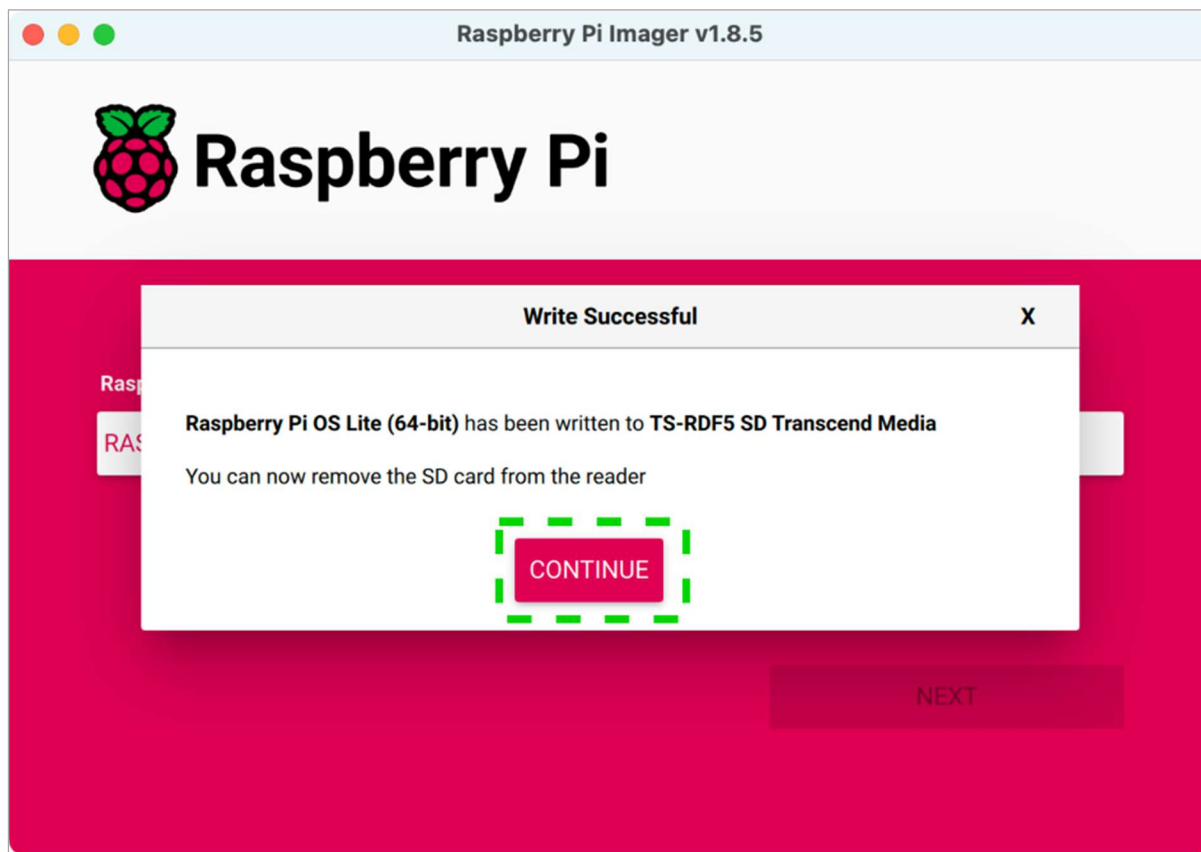


Figure 17-17 – Final confirmation that the burn process is complete

```
nigelbowden@nigel ~ % ping sensor.local
PING sensor.local (192.168.1.90): 56 data bytes
64 bytes from 192.168.1.90: icmp_seq=0 ttl=64 time=7.004 ms
64 bytes from 192.168.1.90: icmp_seq=1 ttl=64 time=7.330 ms
64 bytes from 192.168.1.90: icmp_seq=2 ttl=64 time=4.296 ms
64 bytes from 192.168.1.90: icmp_seq=3 ttl=64 time=7.265 ms
64 bytes from 192.168.1.90: icmp_seq=4 ttl=64 time=3.246 ms
64 bytes from 192.168.1.90: icmp_seq=5 ttl=64 time=2.702 ms
64 bytes from 192.168.1.90: icmp_seq=6 ttl=64 time=7.256 ms
64 bytes from 192.168.1.90: icmp_seq=7 ttl=64 time=3.202 ms
^C
--- sensor.local ping statistics ---
8 packets transmitted, 8 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 2.702/5.288/7.330/1.971 ms
nigelbowden@nigel ~ %
```

Figure 17-18 – Verify that the sensor is reachable over its Ethernet port using ping

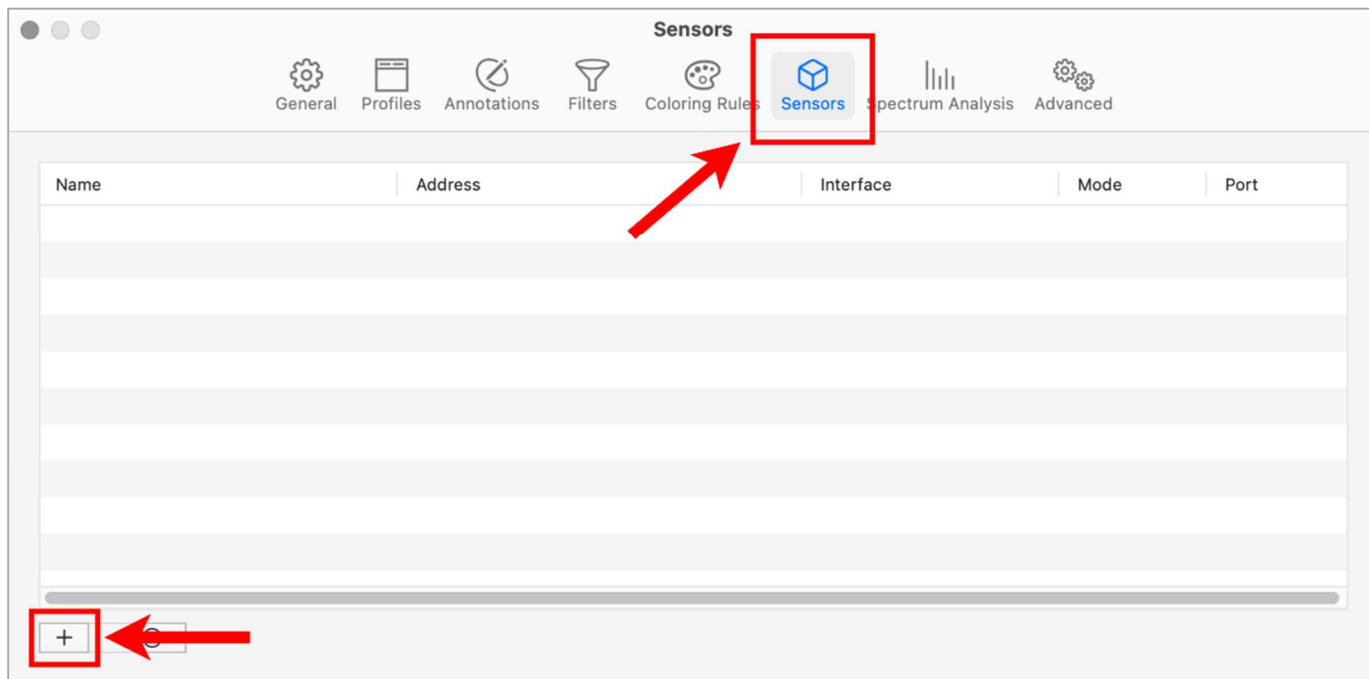


Figure 17-19 – Hit the “+” button on the *Sensors* settings tab

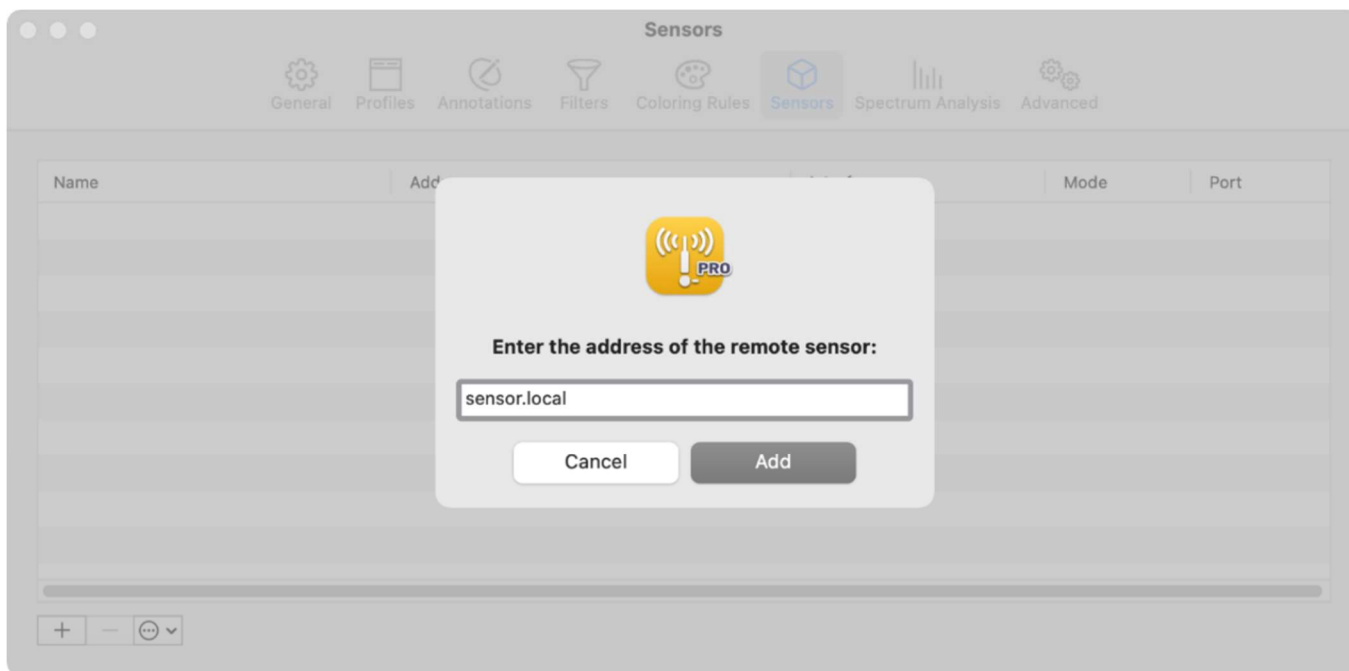


Figure 17-20 – Enter the sensor’s name or IP address



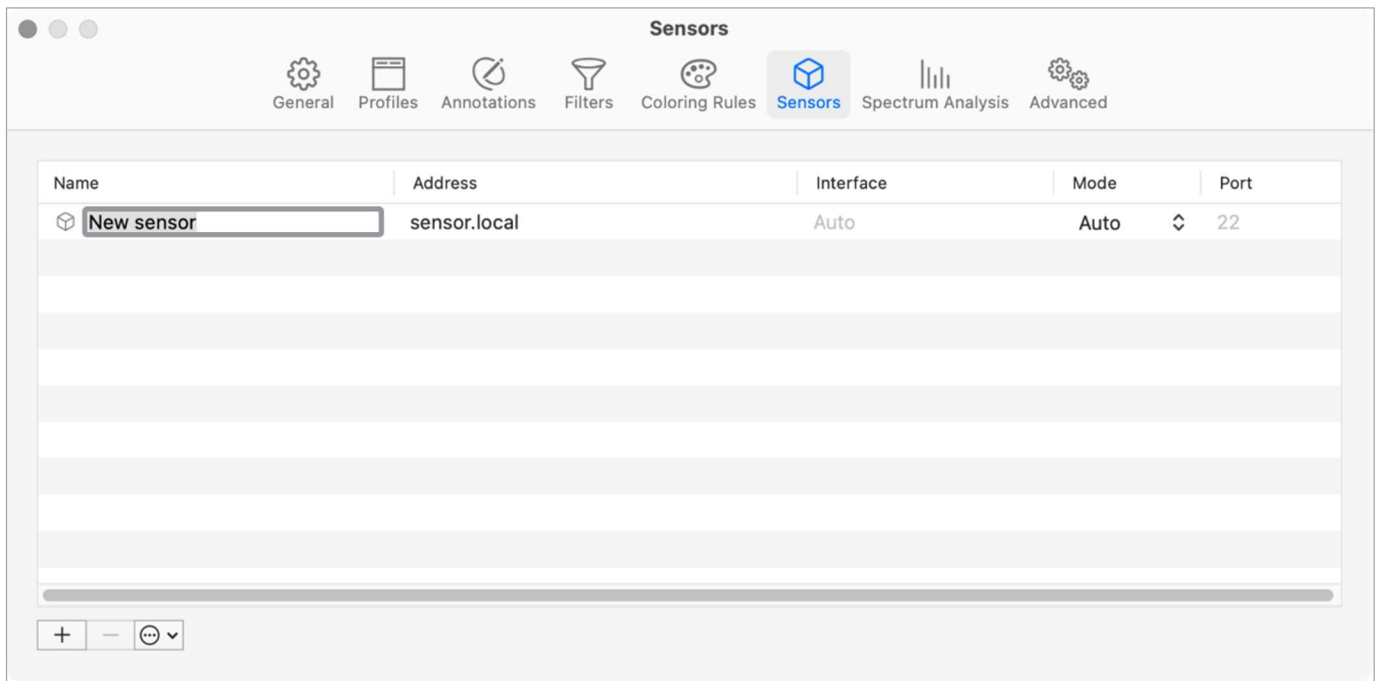


Figure 17-21 – Click on the Name field and enter the chosen name for the sensor

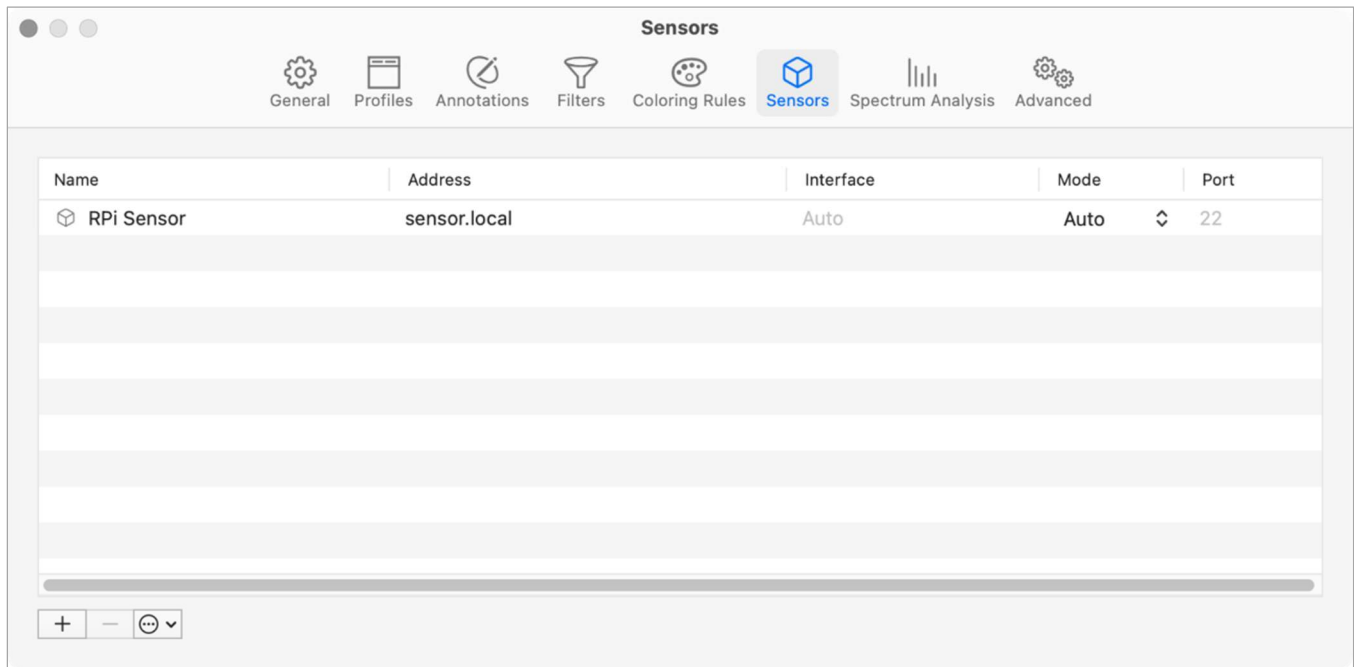


Figure 17-22 – The final sensor name

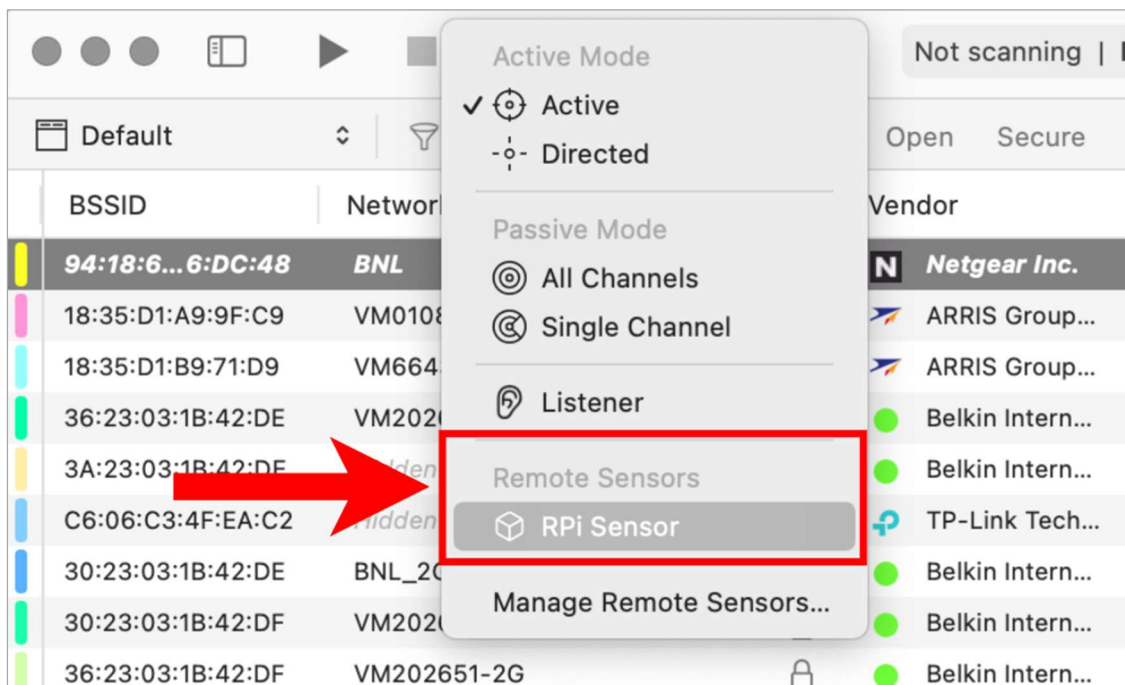


Figure 17-23 – Choose sensor in scan selector

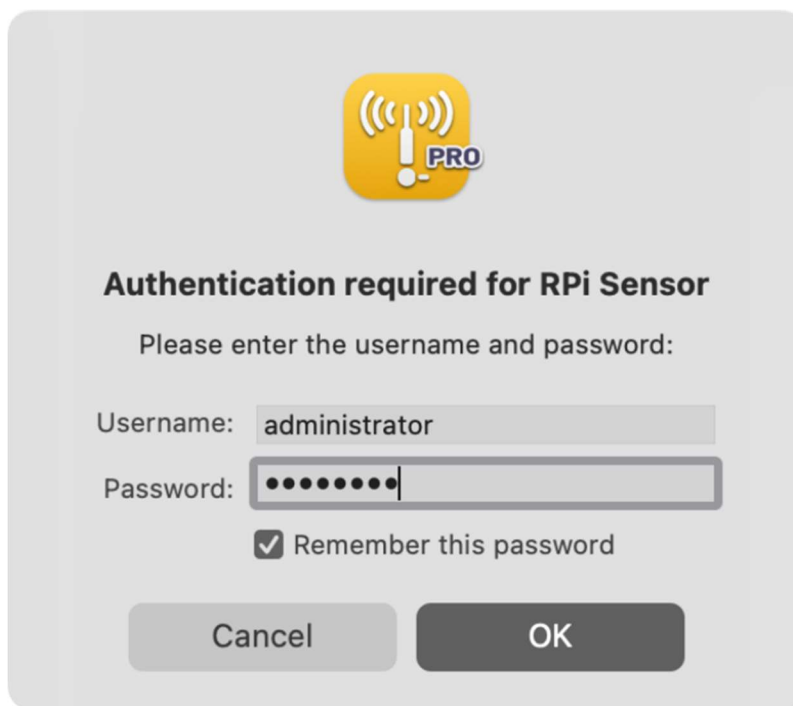


Figure 17-24 – When the sensor is chosen in the scan selector, enter the login credentials

## WiFi Explorer Pro 3: The Definitive User Guide (Screenshots)

BSSID	Network Name	Vendor	Channel	Signal	Channel Width	Band	Mode	Amendments
<b>94:18:65:B6:DC:48</b>	<b>BNL</b>	<b>Netgear Inc.</b>	<b>48</b>	<b>-51 dBm</b>	<b>40 MHz</b>	<b>5 GHz</b>	<b>a/n/ac/ax</b>	<b>d/e/h/i/w</b>
36:23:03:1B:42:DE	VM202651-2G	Belkin Interna...	3	-62 dBm	20 MHz	2.4 GHz	b/g/n	e/i/k/v
C6:06:C3:4F:EA:C2	Hidden Network	TP-Link Tech...	1	-64 dBm	40 MHz	2.4 GHz	b/g/n	d/e/i/k/v
C0:06:C3:4F:EA:C2	VM0108420	TP-Link Tech...	1	-64 dBm	40 MHz	2.4 GHz	b/g/n	d/e/i/k/v
3A:23:03:1B:42:DE	Hidden Network	Belkin Interna...	3	-65 dBm	20 MHz	2.4 GHz	b/g/n	e/i/v
30:23:03:1B:42:DE	BNL_2G	Belkin Interna...	3	-65 dBm	20 MHz	2.4 GHz	b/g/n	e/i/k/v
18:35:D1:A9:9F:C9	VM0108420	CommScope	11	-68 dBm	20 MHz	2.4 GHz	b/g/n	d/e/i/k/v
FA:DA:0C:6F:79:B8	DIRECT-...LaserJet	HP Inc.	11	-68 dBm	20 MHz	2.4 GHz	g/n	e/h/i
C6:06:C3:4F:EB:DA	Hidden Network	TP-Link Tech...	1	-70 dBm	40 MHz	2.4 GHz	b/g/n	d/e/i/k/v
18:35:D1:B9:71:D9	VM6643873	CommScope	11	-72 dBm	20 MHz	2.4 GHz	b/g/n	d/e/i/k/v
0A:1F:26:1A:A6:9C	VM1953835	Cisco System...	1	-72 dBm	20 MHz	2.4 GHz	b/g/n	d/e/h/i/k/v
36:23:03:1B:42:DF	VM202651-2G	Belkin Interna...	100	-75 dBm	80 MHz	5 GHz	a/n/ac	e/h/i/k/v
30:23:03:1B:42:DF	VM202651-5G	Belkin Interna...	100	-76 dBm	80 MHz	5 GHz	a/n/ac	e/h/i/k/v
18:35:D1:B9:71:DF	VM6643873	CommScope	44	-78 dBm	80 MHz	5 GHz	a/n/ac	d/e/i/k/v
02:68:EB:44:88:B8	DIRECT-...ro 8020	HP Inc.	1	-79 dBm	20 MHz	2.4 GHz	g/n	e/i
C0:06:C3:4F:EB:DA	VM0108420	TP-Link Tech...	1	-81 dBm	40 MHz	2.4 GHz	b/g/n	d/e/i/k/v
0A:1F:26:1A:A6:9F	Hidden Network	Cisco System...	1	-82 dBm	20 MHz	2.4 GHz	b/g/n	d/e/h/i/v
18:83:BF:34:67:E3	BTHub5-MG23	Arcadyan Tec...	1	-82 dBm	20 MHz	2.4 GHz	b/g/n	d/e/i

Networks Found: 30, Displayed: 30 (100%)

Figure 17-25 - Observe the RPI sensor scan results after a few seconds