YELLOWJACKET-TABLET

802.11b/a/n/g Wi-Fi Spectrum Analyzer

manual version 1.8

Yellowjacket®-TABLET Interface Hardware user's manual

Yellowjacket®-TABLET/Yellowjacket®-TABLET Interface Hardware

Yellowjacket®-TABLET (Toughbook) Wi-Fi Analyzer Software user's manual

Be sure to disable the Wireless LAN Radio and the Bluetooth Transmitter on the Tablet PC to minimize interference with the Yellowjacket® Receiver before you establish a connection.

Unpacking Your Yellowjacket®-TABLET

Opening your box reveals Yellowjacket®-TABLET protective case, documentation box and monopole.

Documentation includes software (some products use CD-ROM while others use SD card installers), user's manual and claibration certificate and USB communication cable.

Unpack and assemble your Yellowjacket®-TABLET unit as shown. Your Yellowjacket®-TABLET is a self-contained spectrum analyzer. The user interface (Samsung Q1 UMPC Tablet), antenna and power connections are all accessible, but there is usually no need to open the protective, yellow and black hard rubber casing. The tablet should not be disconnected and removed nor batteries changed by users. Removing such components will void your hardware warranty. Please consult the included Samsung Q1 documentation for complete operating instructions, troubleshooting and tips of tablet PC. When you open your yellow, hard, protective case you will see the Yellowjacket®-TABLET unit with receiver hidden below it, included antennas, SD software loader card, receiver power/charging adapter, ethernet cable and GPS antenna. The required USB communication cable is located in the documentation box. After screwing the bottom plate onto the monopole, the Yellowjacket®-TABLET unit simply rests on the surface to alleviate the weight for the user.

BVS offers 2 different tablet models with your Yellowjacket system. The Panasonic Toughbook is a premium tablet option that includes a full 3 year warranty over the standard 1 year Samsung Q1 tablet warranty.

Yellowjacket Top View

Panasonic Toughbook (both models shown) Samsung Q1

Power ON/OFF switch located under rubber flap

SMA Male Antenna Input
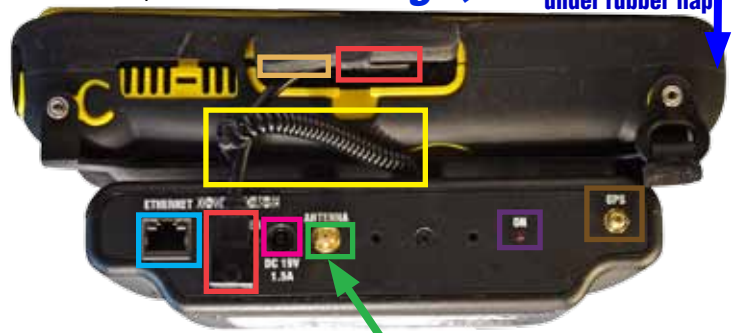**Warning: Maximum input 0 dBm NO DC Input**

SMA Male Antenna Input
Warning: Maximum input 0 dBm NO DC Input

Center screw must be loosened fully (turn counterclockwise) before sliding tablet off of receiver.

About Yellowjacket®-TABLET

All basic ports and functions on the Samsung Q1 Tablet portion of your Yellowjacket-TABLET Wi-Fi Analzyer are explained in your Samsung Q1 user's manual included with your Yellowjacket unit. The Yellowjacket receiver contains all indicators and ports you need to communicate with the Q1 tablet. The receiver should not be removed from the tablet unless a BVS technical support expert has instructed you to do so. The ethernet 10/100 Mbit port is used to communicate with a PC. Be sure that the USB comm cable is securely connected between the Q1 tablet and Yellowjacket receiver. The SD card slot is located next to that for installing, removing or re-installing the Yellowjacket-TABLET software. The SMA male antenna connector is for use with the included omni directional antennas or the optional DF antenna systems. Please consult with Berkeley engineers before employing any antenna not supplied by BVS. The sylus can be found connected to the attached coil-cord which is attached to the bottom of the Q1 tablet. The unit also contains a GPS antenna input when GPS data is required for studies.
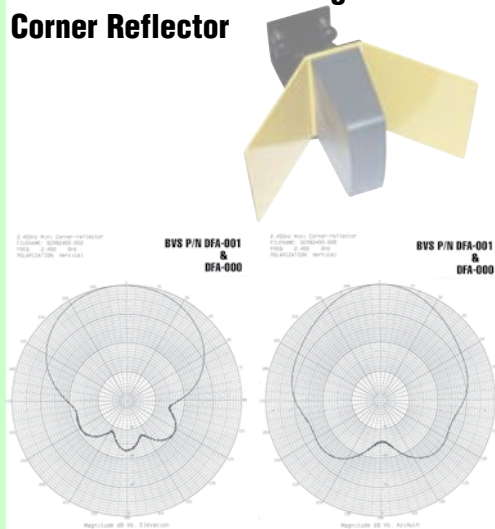
Powering Your Yellowjacket®-TABLET

Powering up your Yellowjacket-TABLET begins by switching power on the Tablet PC. The Power ON/OFF switch is located on the side of the tablet PC under the rubber flap. Yellowjacket-TABLET Wi-Fi Analzyer contains an internal, rechargeable Li-Ion battery system in the receiver unit on the bottom. Users should not open the receiver unless a BVS technical support expert has instructed you to do so. The internal batteries are charged using the supplied DC power adapter connected to the power input. Consult the technical specifications sheet for common charging and running times for your unit. The red LED light next to this power input will blink while charging and go solid red when charging is complete. When your Yellowjacket-TABLET Wi-Fi Analzyer is charged, the Samsung Q1 tablet is powered on and the Yellowjacket-TABLET software is running, the red LED on the receiver (next to the GPS antenna input) will turn on. This indicates constant communication between the receiver and the tablet interface. NOTE: BVS recommends charging the unit every 2 weeks and at least once a month to avoid poor battery life.

Opening Your Yellowjacket®-TABLET

Always contact BVS technical support (1-888-737-4287 or +1 732-548-3737 8AM - 6PM EST or e-mail support@bvsystems.com) before attempting any modifications or repairs to your Yellowjacket-TABLET. In some cases, users may replace batteries or perform simple changes within the receiver module but failure to contact BVS technical support for procedural steps before proceeding will result in a VOIDED WARRANTY.

Optional Directional & Omni Antenna Specifications
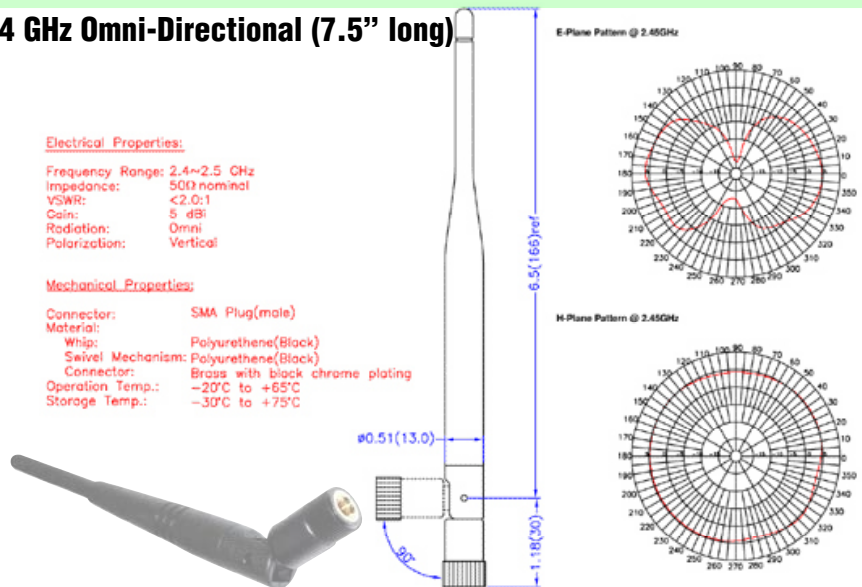
2.4 GHz Direction Finding Corner Reflector

BVS P/N DFA-001 & DFA-000

BVS P/N DFA-001 & DFA-000

Magnitude dB Vs. Elevation

Magnitude dB Vs. Azimuth

2.4 GHz Omni-Directional (7.5" long)

Electrical Properties:

Frequency Range: 2.4~2.5 GHz
Impedance: 50Ω nominal
VSWR: <2.0:1
Gain: 5 dBi
Radiation: Omni
Polarization: Vertical

Mechanical Properties:

Connector: SMA Plug(male)
Material:
  Whip: Polyurethene(Black)
  Swivel Mechanism: Polyurethene(Black)
  Connector: Brass with black chrome plating
Operation Temp.: −20°C to +65°C
Storage Temp.: −30°C to +75°C

ø0.51(13.0)

90°

1.18(30)

6.5(165)ref

E-Plane Pattern @ 2.45GHz

H-Plane Pattern @ 2.45GHz

4.9/5 GHz Direction Finding Corner Reflector

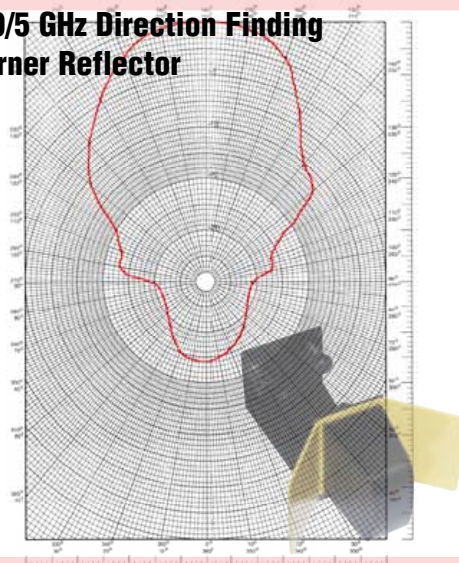**4.9/5 GHz Omni-Directional (5.5" long)**

Electrical Properties:

Frequency Range: 5.15~5.35 GHz
Impedance: 50Ω nominal
VSWR: <2.0:1
Gain: 5 dBi
Radiation: Omni
Polarization: Vertical

Mechanical Properties:

Connector: SMA Plug(male)
Material:
  Whip: Polyurethene(Black)
  Swivel Mechanism: Polycarbonate(Black)
  Connector: Brass with black chrome plating
Operation Temp.: −20°C to +65°C
Storage Temp.: −30°C to +75°C

ø0.51(13.0)

90°

1.18(30)

4.2(107)

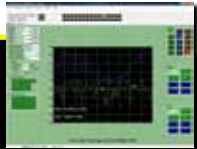ø0.49(12.5)
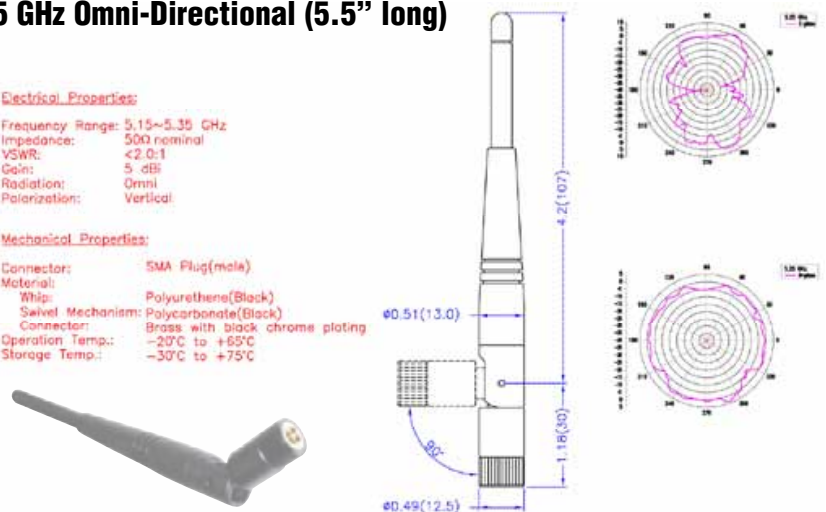
Accessories for your YELLOWJACKET-*TABLET*

12VDC to 110VAC car cigarette lighter power inverter
75 Watts output
P/N YF-12V-USB
$ 75.00
OPTIONAL

Rugged Carrying Case
ABS Plastic
P/N P-CASE
$ 150.00
STANDARD

Remote Manager
802.11b/a/n/g monitoring software
Ask for a Quote
OPTIONAL

4.9/5 GHz Direction Finding Antenna with mounting bracket, cable & SMA male
9 dBi gain
P/N 5NE
$ 250.00
OPTIONAL

Swarm
802.11b/a/n/g mapping software
Ask for a Quote
OPTIONAL
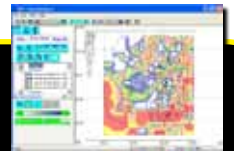
30 dB attenuator pad for use with directional antennas (between DF antenna & Yellowjacket®)
SMA male to female
P/N bbpad30
$ 30.00
OPTIONAL

2.4 GHz Omni Antenna
SMA male swivel
P/N S151AM-2450S
$ 25.00
STANDARD

3.5 GHz Omni Antenna
SMA male swivel
P/N 5NP
$ 25.00
STANDARD

2.4 GHz Direction Finding Antenna with mounting bracket, cable & SMA male
9 dBi gain
P/N 2ND
$ 250.00
OPTIONAL

4.9/5 GHz Omni Antenna
SMA male swivel
Co-Linear Dipole 5 dBi VSWR 1.8:1
P/N K181AM-5250S
$ 25.00
STANDARD

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SWARM™

802.11b/a/n/g Wi-Fi Indoor/Outdoor Site Surveys

1 Create Survey Maps:
Swarm Projector (PC)

Import any bitmap for use in your Yellowjacket B/A/N/G

Create geo-coded site files for analysis

2 Constant Realtime Wi-Fi Surveys:
Swarm Collector (iPAQ)

Scan all 802.11 channels on BOTH 2.4 GHz and 5 GHz

JPEG snapshots of any survey screen

Collect survey data automatically via GPS

Collect data by manually tapping touch-screen

3 Coverage Reliability Analysis:
Swarm Analyzer (PC)

Plot surveys in multiple graphical and table views

Plot coverage by APs or AP channels

Locate unknown APs' positions

Print and export plots into bmp files for spreadsheets

Create KML file for plotting coverage over Google Earth™

Swarm™ combines the power of realtime Yellowjacket® 802.11b/a/n/g Wi-Fi measurements with GPS geo-coding accuracy. First, create your survey bitmaps with both Linear and GPS **PROJECTOR** software. Next, simply walk or drive to any spot with GPS reception while *Swarm™* **COLLECTOR** scans all 802.11b/a/n/g channels and correlates them to your exact location automatically via GPS or manually by tapping on the touch-screen. GPS measurements provide both LAT and LON as well as time stamping for a complete Wi-Fi survey path anywhere in the world. *Swarm™* **COLLECTOR** allows JPEG screen snapshots to be taken at particular points of interest throughout the survey. Finally, survey data such as RSSI, MAC and SSID may be exported into *Swarm's* **ANALYZER** for further mapping coverage studies in multiple graphical and tabular layouts. In areas with little or no GPS reception, *Swarm™* **ANALYZER** only needs a few reference points to fill in the locations for the rest making it effective for quick outdoor studies. Surveys may be exported further into KML files for plotting in applications such as Google Earth™.
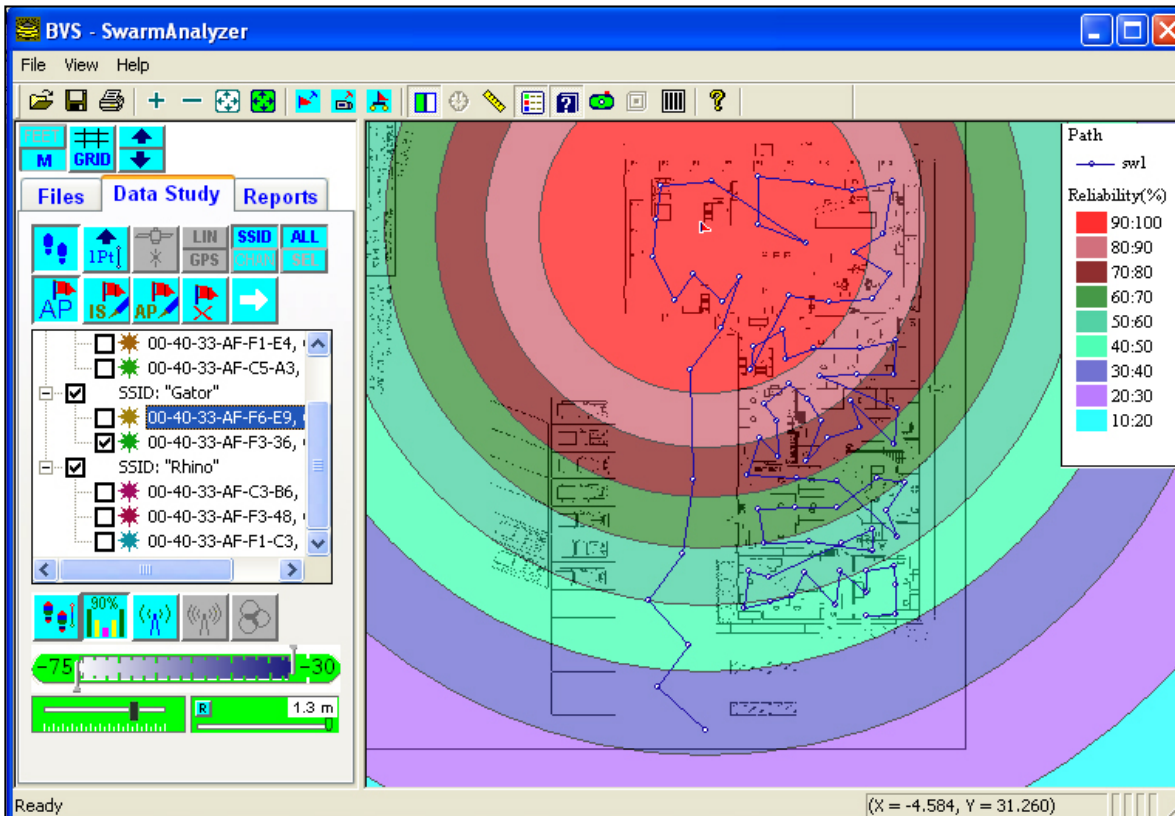
Features:

- Create survey bitmaps with BVS' Linear or GPS Projector software

- Collect data by using GPS position for outdoor surveys

- Collect data by manually tapping locations for indoor studies

- Choose any 802.11b/a/n/g Wi-Fi channels to scan

- JPEG screen snapshots may be taken throughout the survey

- Survey data such as RSSI, MAC and SSID is exported into Swarm Analyzer for further mapping coverage studies in multiple graphical and spreadsheet layouts

- Surveys may be exported further into KML files for plotting in applications such as GoogleEarth™

Call us today for more information:

TOLL FREE 1-888-737-4287

Tel: +1 732-548-3737   Fax: (732) 548-3404

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BERKELEY VARITRONICS SYSTEMS®

Clarifying RF

Providing wireless solutions for over 35 years.

OPTIONAL SOFTWARE AVAILABLE FOR YOUR YELLOWJACKET-TABLET

REMOTE MANAGER software

software for your

BEETLE-B/A/N/G
YELLOWJACKET®-B/A/N/G

802.11 B/A/N/G REMOTE MONITORING SOFTWARE

MAC

SSID

Multipath

Power Triggers*

Waveform Traces*

Absolute Channel

Spectrum Analysis*

Peak Hold/Search*

Signal-to-Noise Ratios

*Yellowjacket support only

...from ANYWHERE

FEATURES

- Controls Yellowjacket B/A/N/G or Beetle-BANG remotely from any RJ-45 connection

- Monitor your network from anywhere - home and office.

- Data collected in real-time and stored in a relational database*

- Create comprehensive reports from your measured network data

- Export reports to PDF® and MS Excel® formats

- Collect spectrum data from the RF environment

- Collect packet data parameters such as MAC, SSID, Channel

- Data reports over various time periods for temporal overview of your network

- Software includes ethernet receiver dongle and cable

Remote Manager™ software is a data monitoring & reporting application that connects to any *Yellowjacket® B/A/N/G or Beetle™-BANG* through a standard 10/100 ethernet connection. With *Remote Manager™*, users can control what wireless data is to be collected via the *Yellowjacket®* or *Beetle™* Wi-Fi receivers and store that data in a relational database* for future retrieval and analysis. *Remote Manager™* allows users to scan the RF spectrum (*Yellowjacket® B/A/N/G only)* for packets and interference over time creating a network footprint of usage to find out who's in your network airspace with or without authorization. *Remote Manager™* even creates comprehensive PDF or MS Excel reports for an IT manager's overview. All of this can be accomplished from anywhere in the world; all you need is access to an ethernet connection to place your *Yellowjacket®* or *Beetle™* Wi-Fi receiver.

## OPTIONAL SOFTWARE AVAILABLE FOR YOUR YELLOWJACKET-TABLET

BVS YellowJacket Toughbook WiFi Analyzer Windows Software User Manual

INTRODUCTION

The YellowJacket Toughbook control software runs on a Windows-based Tablet (XP/Vista) that is connected to a YellowJacket BANG system. This connection is made through USB. The software can also run on a Windows PC or laptop if portability is not desired.

Through this USB connection, the YellowJacket BANG (YJBANG) can be controlled. The YJBANG can be set to any mode and settings available. Data can be monitored in real-time and stored in a log file for later post-processing.
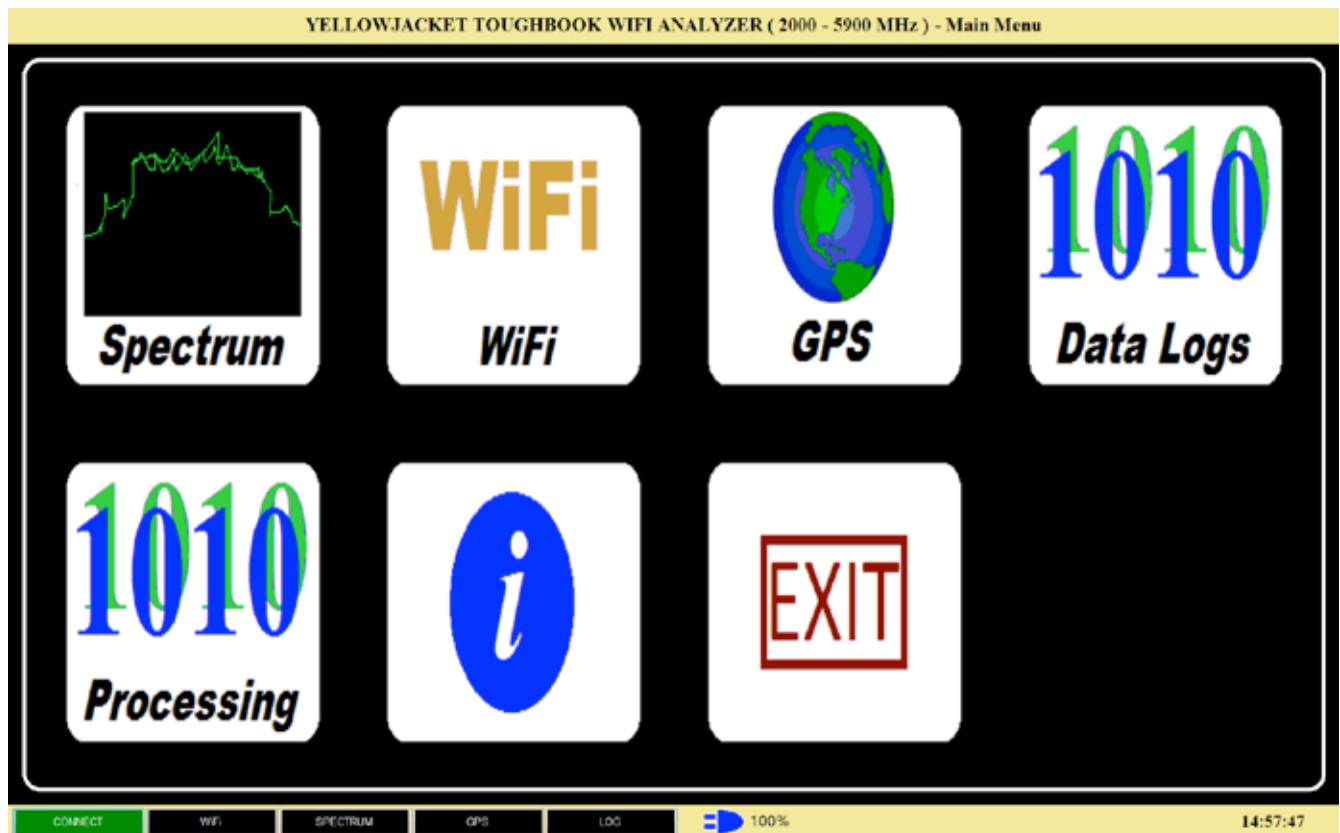
YellowJacket Toughbook Software

INSTALLATION

The YellowJacket software can be installed from the SD card provided using the USB SD card adapter. .NET Framework needs to be installed on the computer in order for the software to function correctly. This framework is already installed at the factory on the tablet systems.

The framework can be found on the SD card or on the internet at www.microsoft.com.

SYSTEM REQUIREMENTS

Below is the minimum system requirements recommended to run the YellowJacket Toughbook software.

Tablet Operating Systems: Windows XP,Vista

PC Operating Systems: Windows Vista, Windows 7 (32-bit)

Processor Speed: 1.33 GHz

Memory: 1 GB RAM

Hard Drive : 15 GB (or more for large log files)

CONNECTION STATUS

The status bar on the bottom of the main window will display the serial number of the YJBANG hardware and the firmware version installed. This information will only be displayed if the software has connected properly. A 'NOT CONNECTED' message will be displayed if this information was not able to be retrieved.

Other items on the toolbar include a real-time clock, log file status, and whether or not the YJBANG is being powered internally via battery or externally via the A/C transformer and cord.

OPERATING MODES

When starting up the application, a main menu will appear. The options for each of the menu items are discussed in the following sections.

SPECTRUM

Pressing the "SPECTRUM" button from the main menu placing the instrument into "Spectrum Analysis" mode. A screen will appear which displays the current spectrum being scanned as well as an option menu on the right-hand side of the screen.
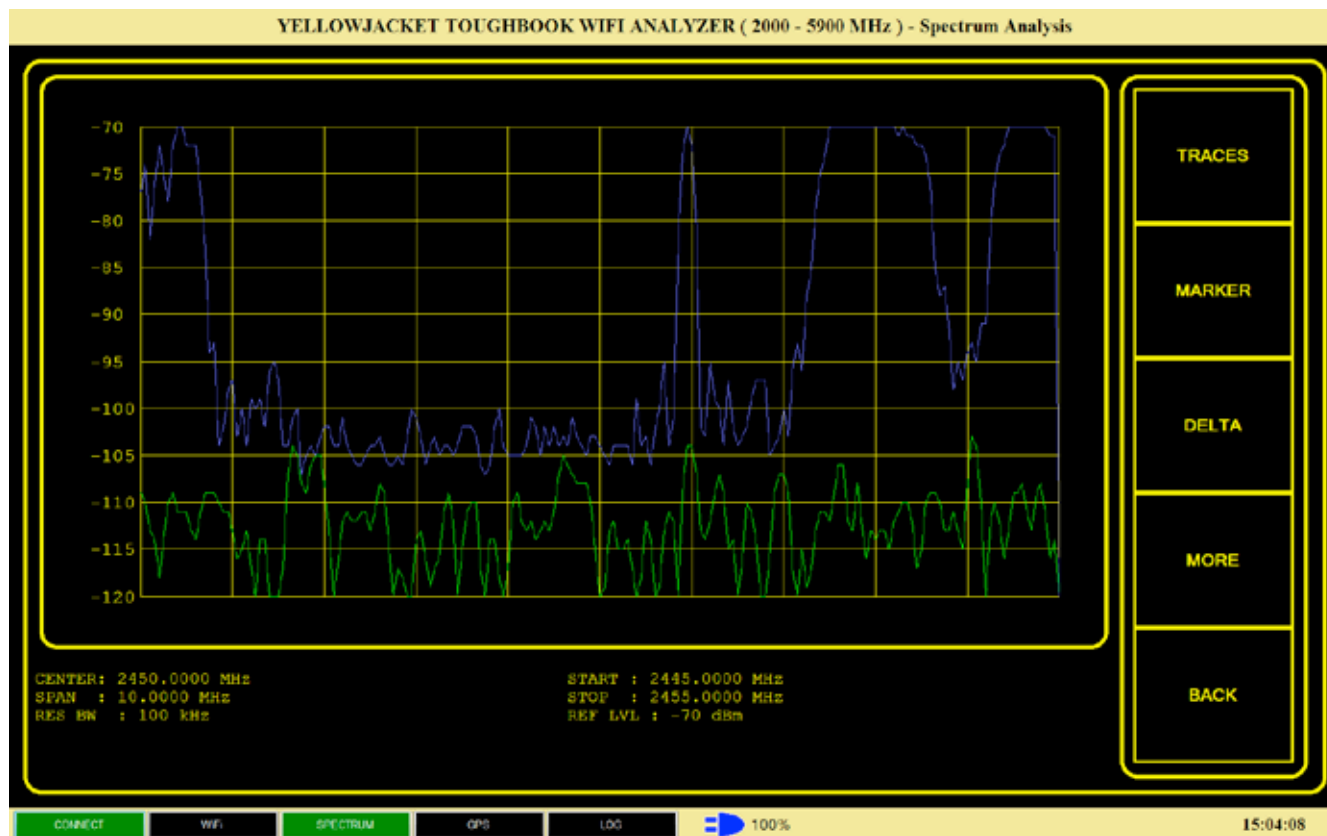
SPECTRUM

SPECTRUM ANALYSIS MODE

The 'RETURN' option on the menu will return control to the main menu.

The following information is displayed underneath the current spectrum:

Center Frequency

Current Span

Start Frequency

Stop Frequency

Resolution Bandwidth

Reference Level

The settings available from the option menu are discussed in the following sections. They are listed in alphabetical order with menu depth listed in parenthesis. For instance, the option for reference level is listed as (AMPLITUDE/REF LVL). This is because the user must press the AMPLITUDE option followed by the REF LVL option.

Center Frequency: (FREQUENCY/CENTER)

Changes the center frequency of the spectrum being displayed.

Delta: (MORE/MORE/DELTA/ON-OFF)

This delta marker shows the difference in frequency and power from the marker.

Delta Center: (MORE/MORE/DELTA/CENTER)

Places the delta at the center frequency of the current spectrum.

Delta Peak: (MORE/MORE/DELTA/PEAK)

Places the delta on the highest power value.

Delta Track: (MORE/MORE/DELTA/TRACK)

Choosing this option will have the delta marker track the peak value.

Full Span: (SPAN/FULL SPAN)

That span will be set to the last span that was set using SPAN.

Last Span: (SPAN/LAST SPAN)

The span will be set to the last span value using any of span options.

Marker: (MORE/MORE/MARKER/ON-OFF)

The marker menu option allows the user to place a marker at a certain frequency. The frequency and power values are shown at the marker position.

Marker Center: (MORE/MORE/MARKER/CENTER)

Places the marker at the center frequency of the current spectrum.

Marker Peak: (MORE/MORE/MARKER/PEAK)

Places the marker on the highest power value.

Marker Track: (MORE/MORE/MARKER/TRACK)

Choosing this option will have the marker track the peak value.

Reference Level: (AMPLITUDE/REF LVL)

This menu option allows the user to set the current reference level of the receiver. The valid choices are between -20 and -70 dBm, in 10 dBm increments. The Reference Level should be adjusted to obtain the greatest dynamic range. The Reference Level should be set so that the strongest signal

on the display is about 10 dB down from the top of the measurement display. If a signal is drawn off the top of the measurement display or the message "clipped" is displayed, lower the Reference Level.

Resolution Bandwidth: (MORE/RES BW)

The YellowJacket measures the energy present in different frequency bins, each bin's width equal to the resolution bandwidth. The resolution bandwidth is set by setting the level for the resolution bandwidth desired.

Why use a small Resolution Bandwidth? A small Resolution Bandwidth is appropriate to measure frequency components and signal characteristics. Smaller Resolution Bandwidths increases the Sweep Time (number of traces displayed per second) for a given frequency span.

Why use a large Resolution Bandwidth? A large Resolution Bandwidth is appropriate to measure large Spans of frequencies quickly. A Resolution Bandwidth larger than the signal's bandwidth can measure channel power.

The YellowJacket may be set to a large Resolution Bandwidth and a large Span to quickly sweep and identify frequencies of interest. The Span and Center can then be decreased to measure frequency components and the signal's characteristics.

Screen Averaging: (MORE/SCR AVG)

Using this setting, the average of the last N sweeps will be displayed.

Span: (SPAN/SPAN)

Sets the new span of the spectrum being displayed.

Span Zoom: (SPAN/SPAN ZOOM)

Reduces the span to half of the current span.

Start Frequency: (FREQUENCY/START)

Sets the start frequency of the spectrum displayed. Center and Span will be adjusted accordingly.

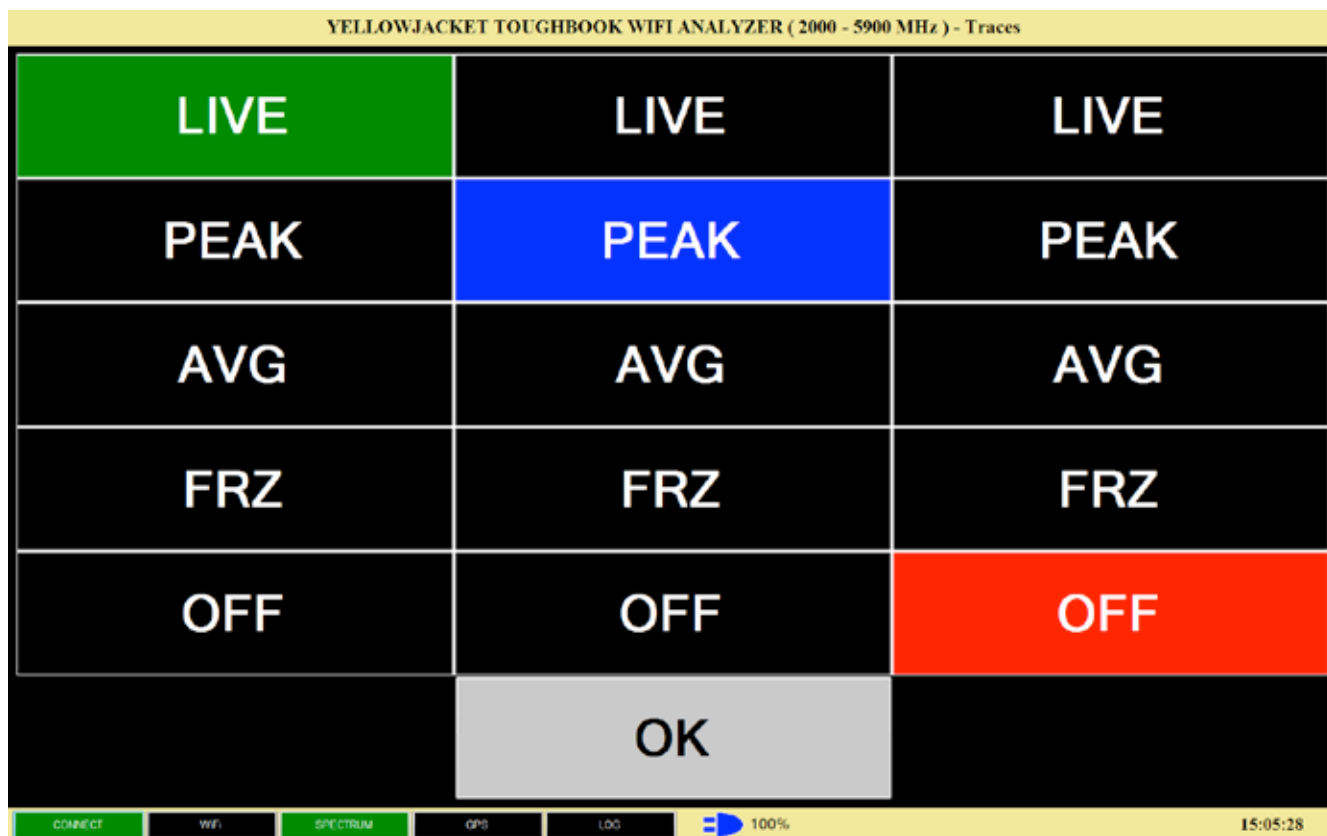Stop Frequency: (FREQUENCY/STOP))

Sets the stop frequency of the spectrum displayed. Center and Span will be adjusted accordingly.

Traces: (MORE/MORE/TRACES)

There are three available traces for display. By default, trace 1 is set to the live feed.

Each trace can be set to the following:

• LIVE – Current real-time data will be displayed.

• PEAK – The highest value recorded at each frequency will be displayed.

• AVG – Video Smoothing and Screen Average results will display.

• FREEZE – The last sweep will be displayed and frozen.

• OFF – Trace will be turned off.

LIVE	LIVE	LIVE
PEAK	PEAK	PEAK
AVG	AVG	AVG
FRZ	FRZ	FRZ
OFF	OFF	OFF
	OK	

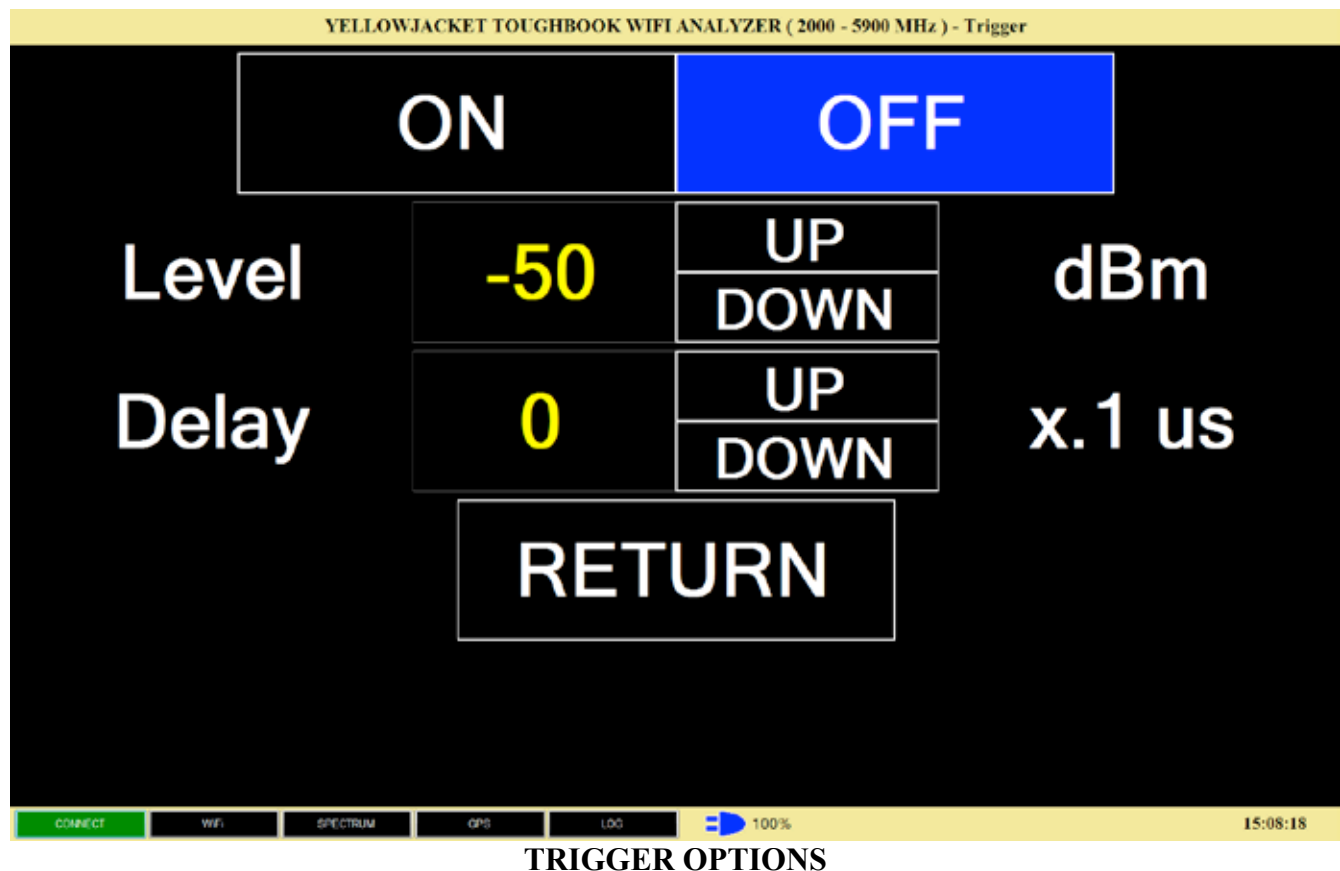| CONNECT | WIFI | SPECTRUM | GPS | LOG | 100% | | 15:05:28 |

TRACE OPTIONS

Trigger: (MORE/MORE/MORE/TRIGGER)

Triggering enables the YJBANG to quickly capture the spectrum from sources that are not continuously transmitting. The trigger threshold represents the amount of CHANNEL POWER that when exceeded will trigger the YJBANG to measure the spectrum.

The trigger delay sets a delay between the trigger threshold being exceeded and the measurement of the spectrum. The trigger threshold is set by the user in dBm, and its range is from the current Reference Level to 20dB below the current Reference Level. Trigger Mode is very useful to capture the spectrum from any source that is not continually transmitting on the same frequency.

The trigger delay sets a delay between the trigger threshold being exceeded and the measurement of the spectrum. The trigger threshold is set by the user in dBm, and its range is from the current Reference Level to 20dB below the

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current Reference Level. Trigger Mode is very useful to capture the spectrum from any source that is not continually transmitting on the same frequency.

ON	OFF

Level -50 UP / DOWN dBm

Delay 0 UP / DOWN x.1 us

RETURN

CONNECT WIFI SPECTRUM GPS LOG 100% 15:08:18

TRIGGER OPTIONS

Video Smoothing: (MORE/VID SM)

Video Smoothing uses adjacent bin averaging to reduce the amount of fluctuation in the measured trace due to noise. This is different from Screen Averaging, which averages the same frequency bin from different traces. Use the arrows to increase or decrease the bandwidth which are averaged for the smoothing.

When properly set, Video Smoothing can reduce the variation of the trace due to noise without distorting the trace. It is especially useful for smoothing signals that are not continuous or repetitive. The user must use good judgment when applying Video Smoothing. It is possible to smooth the trace too much so that the trace no longer represents the spectrum of the signal.

Wi-Fi

Pressing the WiFi icon from the main menu brings up the 802.11 scan mode. This mode will display any 802.11 devices found on any of the frequencies in the scan list.

SCAN MODE

By default, the last frequency list selected is used. A new or existing channel table can be loaded by choosing the "channel list" option from the options menu on the right. Using this dialog, a user can create a new list, and save/restore existing lists to /from a file.

802.11 MULTI-FREQUENCY DEVICE SCAN
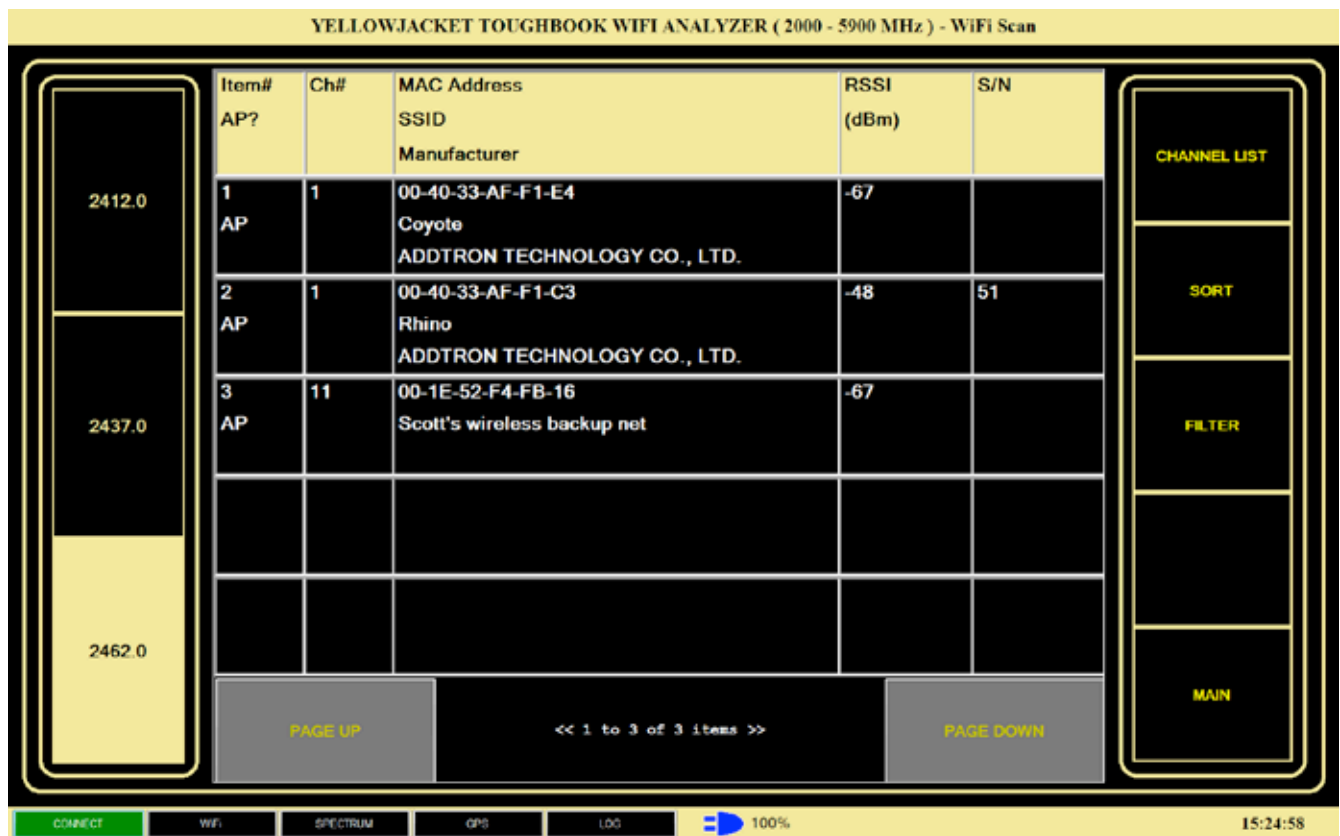
Scan Mode will scan through these frequencies one at a time. If there are more than 10 frequencies in the list, than a section of the list which is being

scanned (up to 10 frequencies) will be displayed. To look at an individual frequency only, touch the frequency box desired from the list on the left.

Each list item displays the following:

Item number
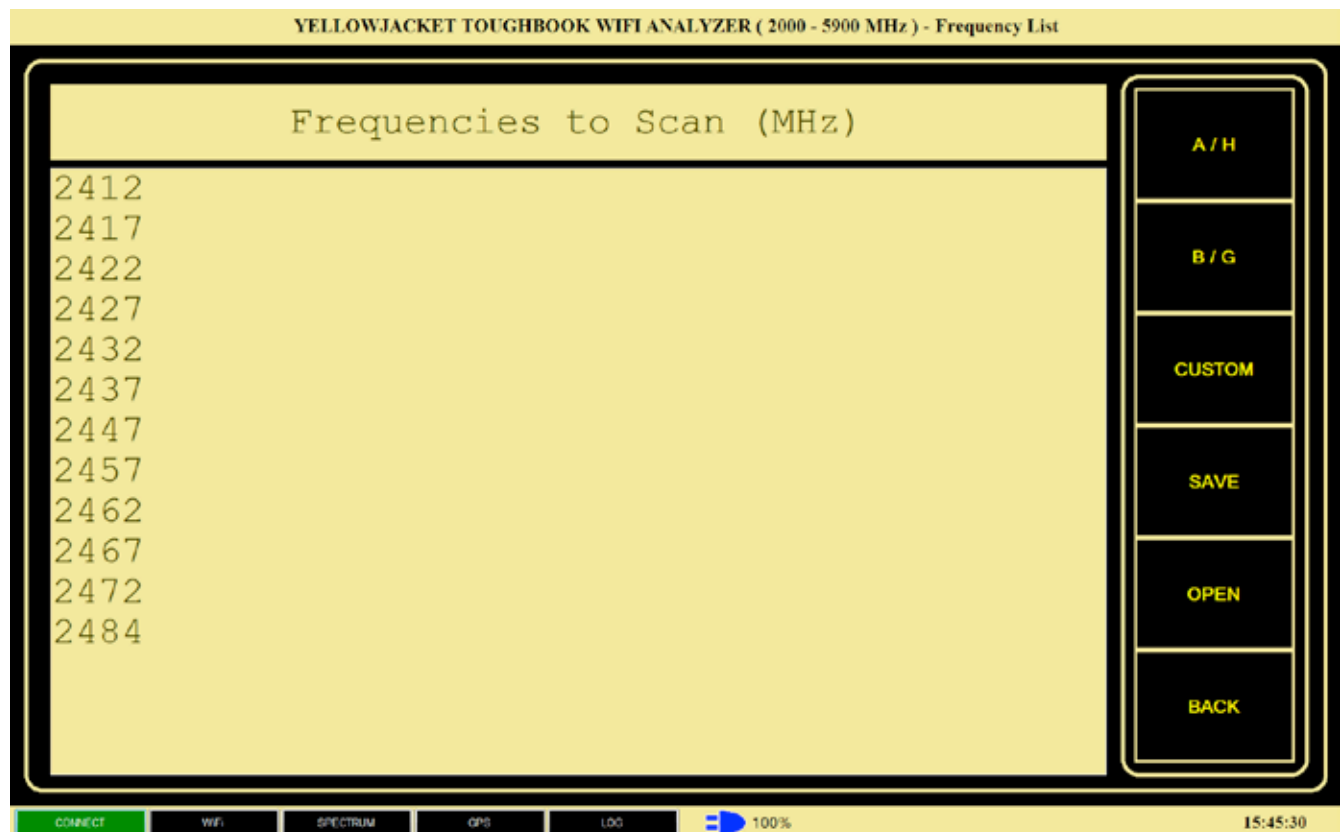Whether it is an AP or not
Channel number
MAC address
SSID
Manufacturer's ID
RSSI
Signal/Noise

Frequencies to Scan (MHz)

2412	**A / H**
2417	
2422	**B / G**
2427	
2432	**CUSTOM**
2437	
2447	
2457	**SAVE**
2462	
2467	
2472	**OPEN**
2484	
	BACK

| CONNECT | WiFi | SPECTRUM | GPS | LOG | 100% | 15:45:30 |

CHANNEL LIST

Choosing "CHANNEL LIST" from the option menu on the right side of the scan screen pulls up the current scan list. This list can be altered by choosing any of the standard 802.11a,b,g, and h channels. Custom frequencies can also

be added to the list.

The current list can be saved to a file for later retrieval.

To choose a standard channel, click on either A/H or B/G on the options menu. Then select or deselect any of the channels on the menu.

Choose "CUSTOM" to enter a custom frequency to be added to the list.
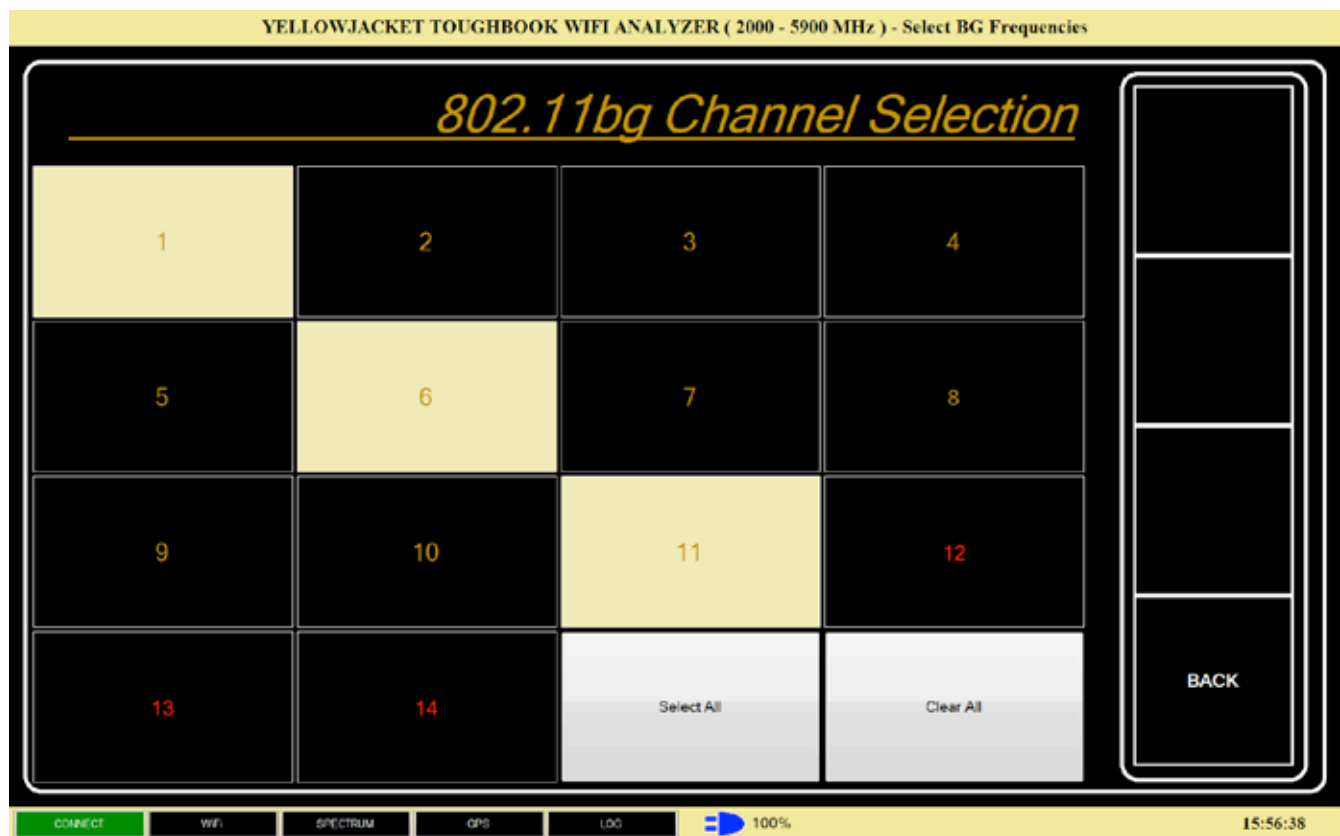
802.11b/g CHANNEL SELECTION SCREEN

SORTING OPTIONS

Choosing the "SORT" option from the scan screen. This option allows a sort of the device list by appearance time, MAC address, SSID, RSSI, channel number, and signal/noise.
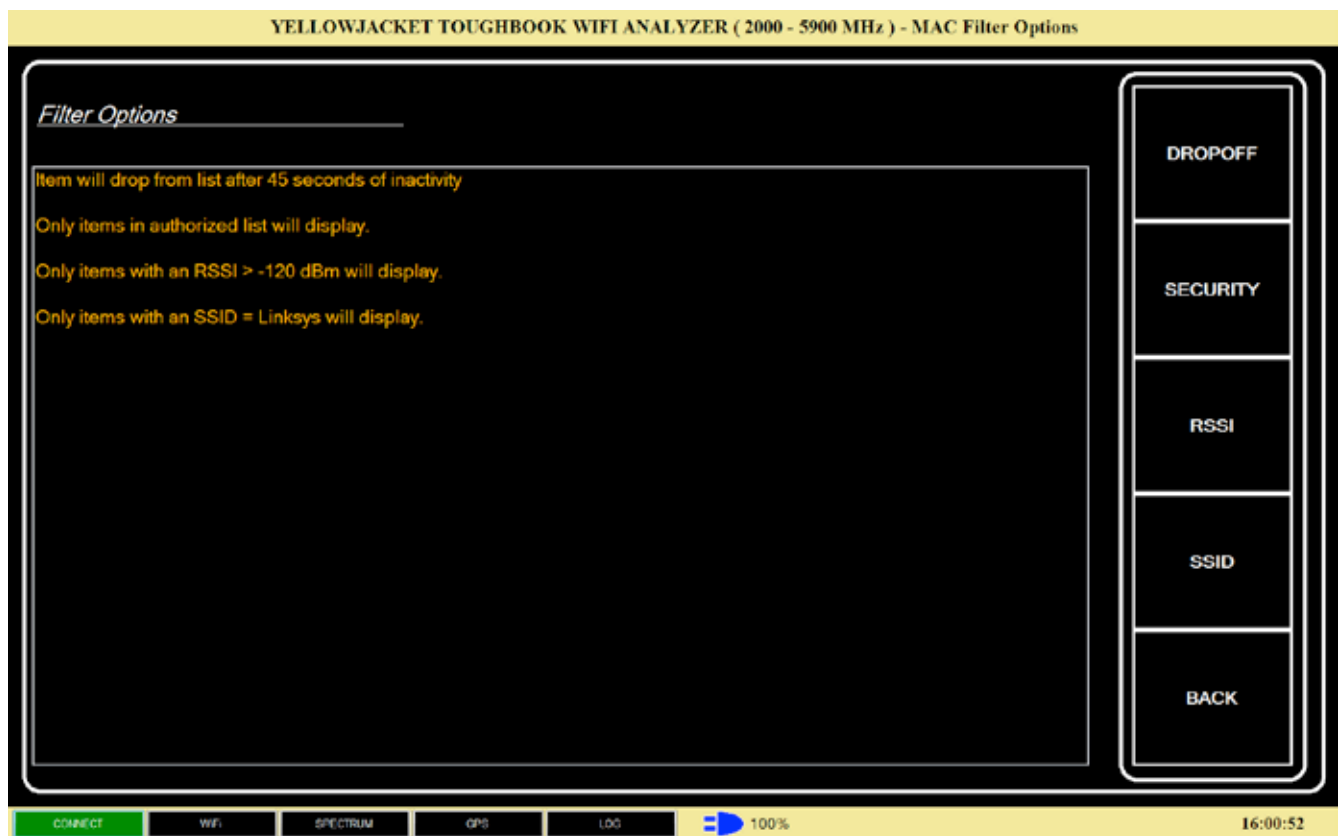

SORT OPTION SCREEN

FILTERING OPTIONS

Choosing the "FILTER" option from the scan screen displays a list of current filters being applied to incoming packets.

These filters include drop off time, authorized MAC addresses, RSSI threshold, and SSID.

Filter Options

Item will drop from list after 45 seconds of inactivity

Only items in authorized list will display.

Only items with an RSSI > -120 dBm will display.

Only items with an SSID = Linksys will display.

DROPOFF

SECURITY

RSSI

SSID

BACK

CONNECT | WiFi | SPECTRUM | GPS | LOG | 100% | 16:00:52

FILTER SETTINGS

Drop Off Time – This filter will remove a device from the list when the device has not been seen in a specified amount of time.

Security – This filter allows the user to set a list of authorized MAC addresses. When an unauthorized MAC address is located, a warning message will display and the MAC address will be added to an unauthorized MAC address list.

RSSI – This value can be set so that only devices with RSSI's above a certain value will be displayed.
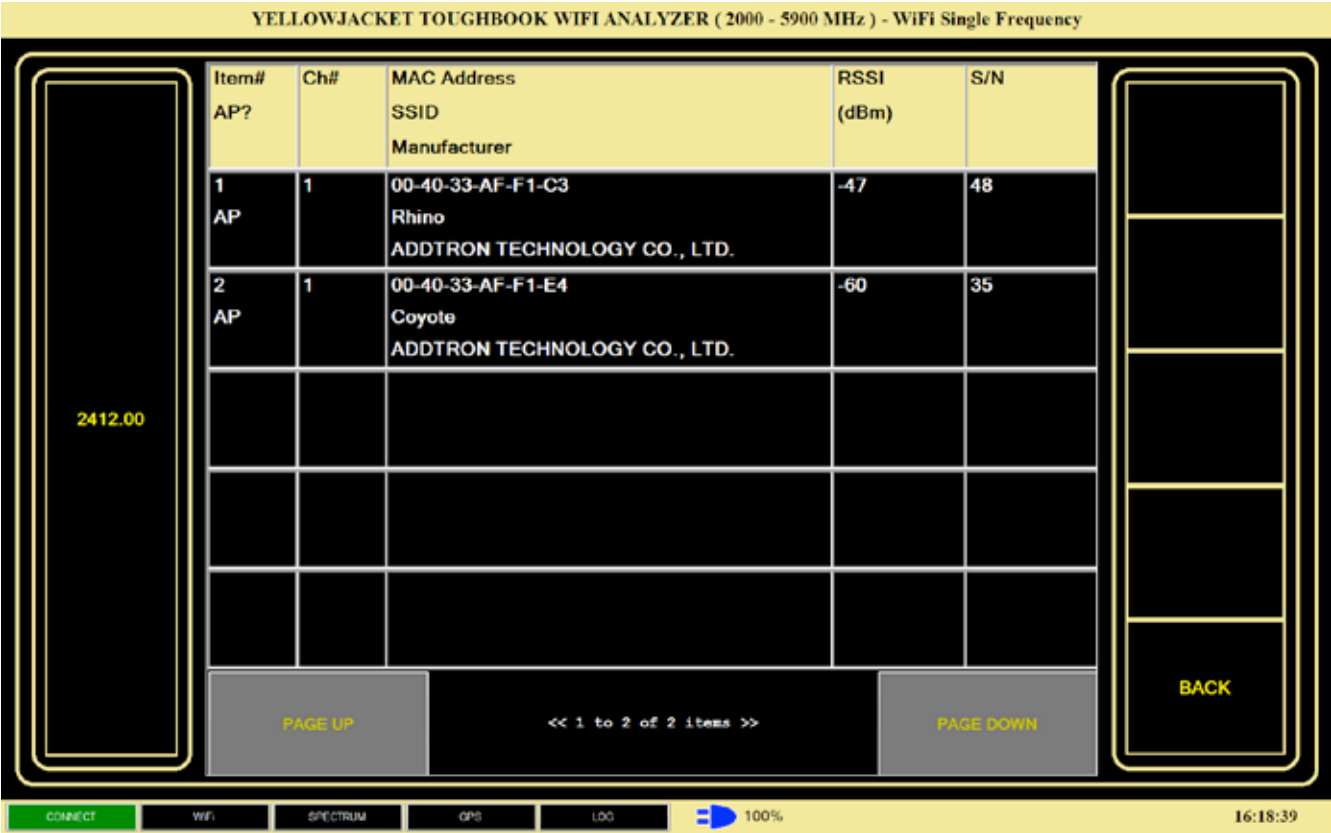
SSID – Can be set so that only devices with a certain SSID will display.
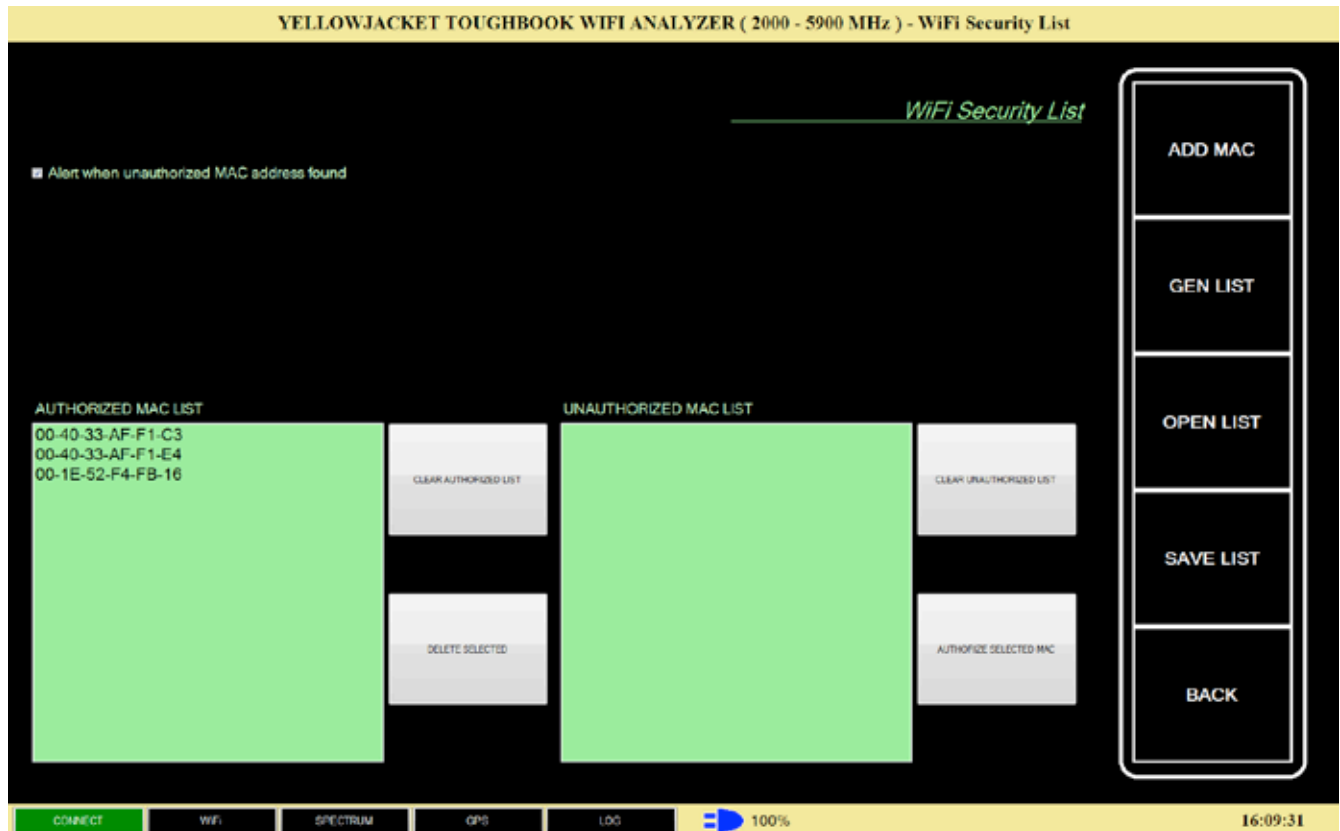
SINGLE FREQUENCY MODE

Single frequency mode can be reached from the scan list screen by selecting one of the frequency buttons on the list to the left of the device list.

Click on the "BACK" button to return to the frequency list screen.

YELLOWJACKET TOUGHBOOK WIFI ANALYZER (2000 - 5900 MHz) - WiFi Single Frequency

Item# AP?	Ch#	MAC Address SSID Manufacturer	RSSI (dBm)	S/N
1 AP	1	00-40-33-AF-F1-C3 Rhino ADDTRON TECHNOLOGY CO., LTD.	-47	48
2 AP	1	00-40-33-AF-F1-E4 Coyote ADDTRON TECHNOLOGY CO., LTD.	-60	35

2412.00

BACK

PAGE UP   << 1 to 2 of 2 items >>   PAGE DOWN

CONNECT   WiFi   SPECTRUM   GPS   LOG   ▄▟ 100%   16:18:39

SINGLE FREQUENCY MODE

SINGLE DEVICE MODE

A closer look can be taken at any device by tapping on the individual box in the device list. Only information from the selected device will be displayed. Press 'BACK' from the options menu to go back to single frequency mode.

The RSSI value for the selected device is shown over time along with the high and low watermark levels.

There are additional data screens that can be reached from this screen. These are multipath, channel frequency response, antenna alignment, high throughput data, and security information. They can each be chosen from the option menu on the right hand side of the display. There are multiple option menus. Select "MORE" to see the additional options.
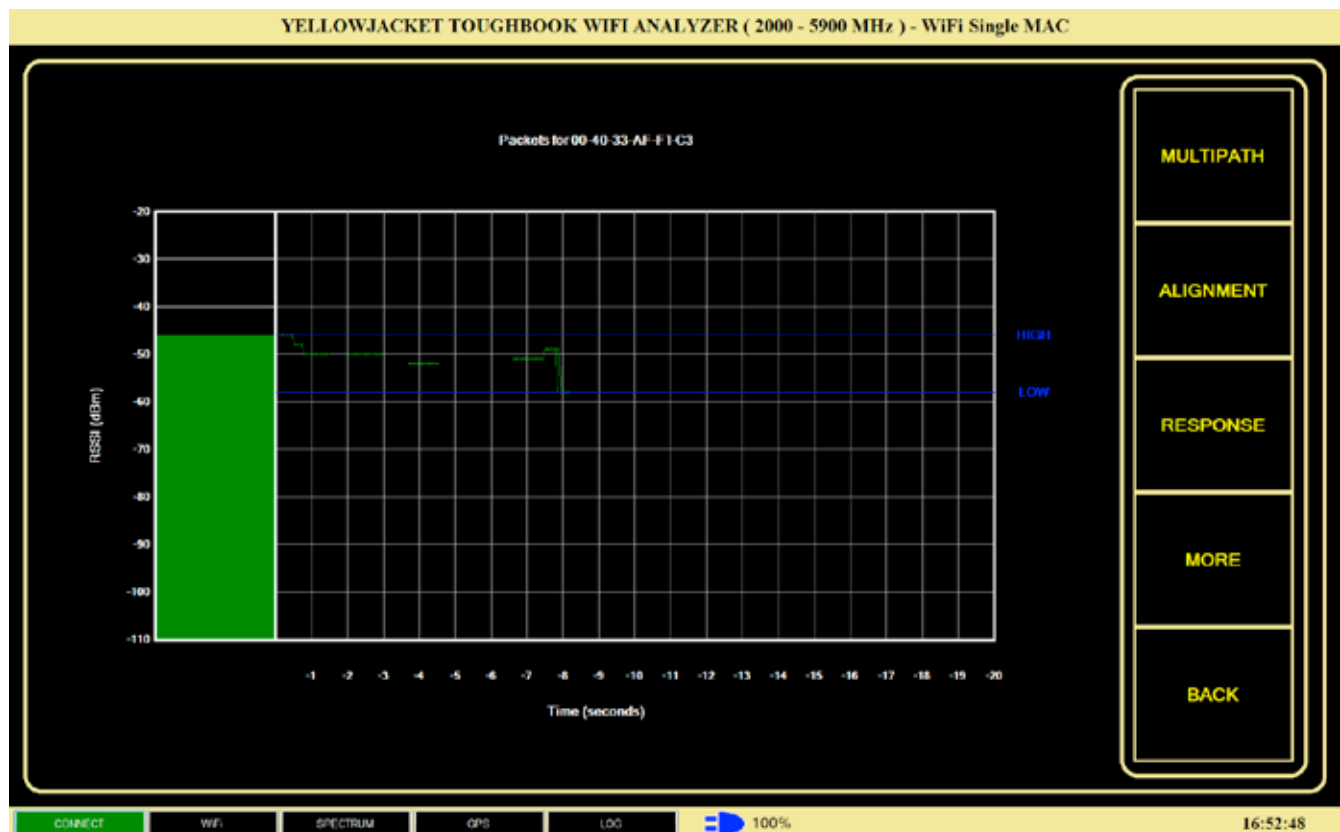
SINGLE DEVICE OVER TIME

MULTIPATH

This display shows the multipath components for the device in question. In general, there should be one peak at or near the line marked '0'. Anything to the left is before the signal arrives. If multiple peaks are displayed to the right of the main peak, these would be multipath components.
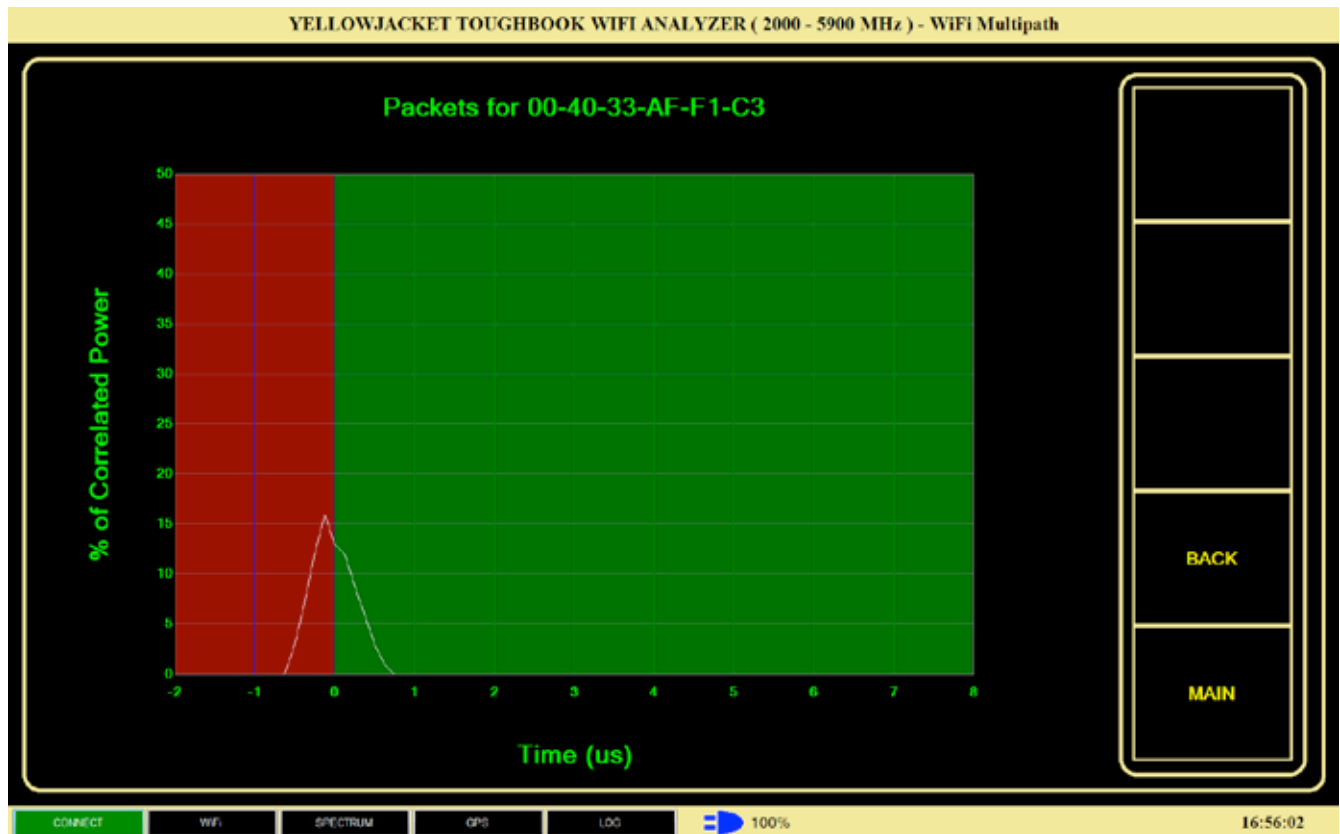

MULTIPATH

In essence, reflections of the main received signal path are seen. This could be from walls inside a building or clutter in the outside environment such as buildings.

ANTENNA ALIGNMENT

By clicking on the 'ALIGNMENT' button, a gauge will display. This gauge shows the current RSSI value (yellow) along with the peak value (blue) in dBm. The peak indicator can be reset by pressing the "Reset Peak" button.

By connecting a direction-finding antenna to the YBANG, this gauge will assist in locating an access point. Simply change direction and watch the gauge. The peak indicator will mark the strongest signal received. By turning the unit until the current indicator approaches the peak indicator, the direction of the incoming signal can be located.
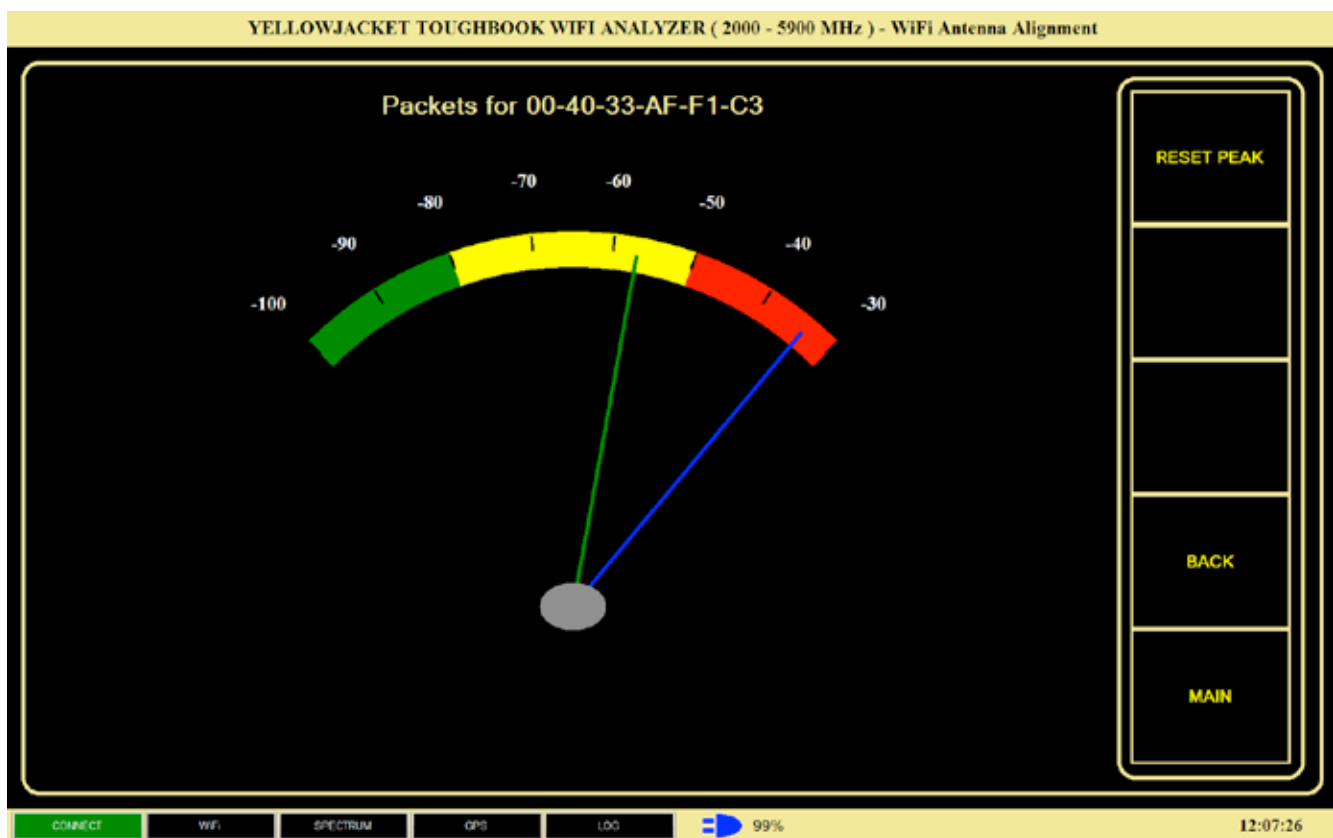
ANTENNA ALIGNMENT

CHANNEL FREQUENCY RESPONSE

The channel frequency response screen shows the frequency response for the MAC in question. The plot is signal strength versus frequency.
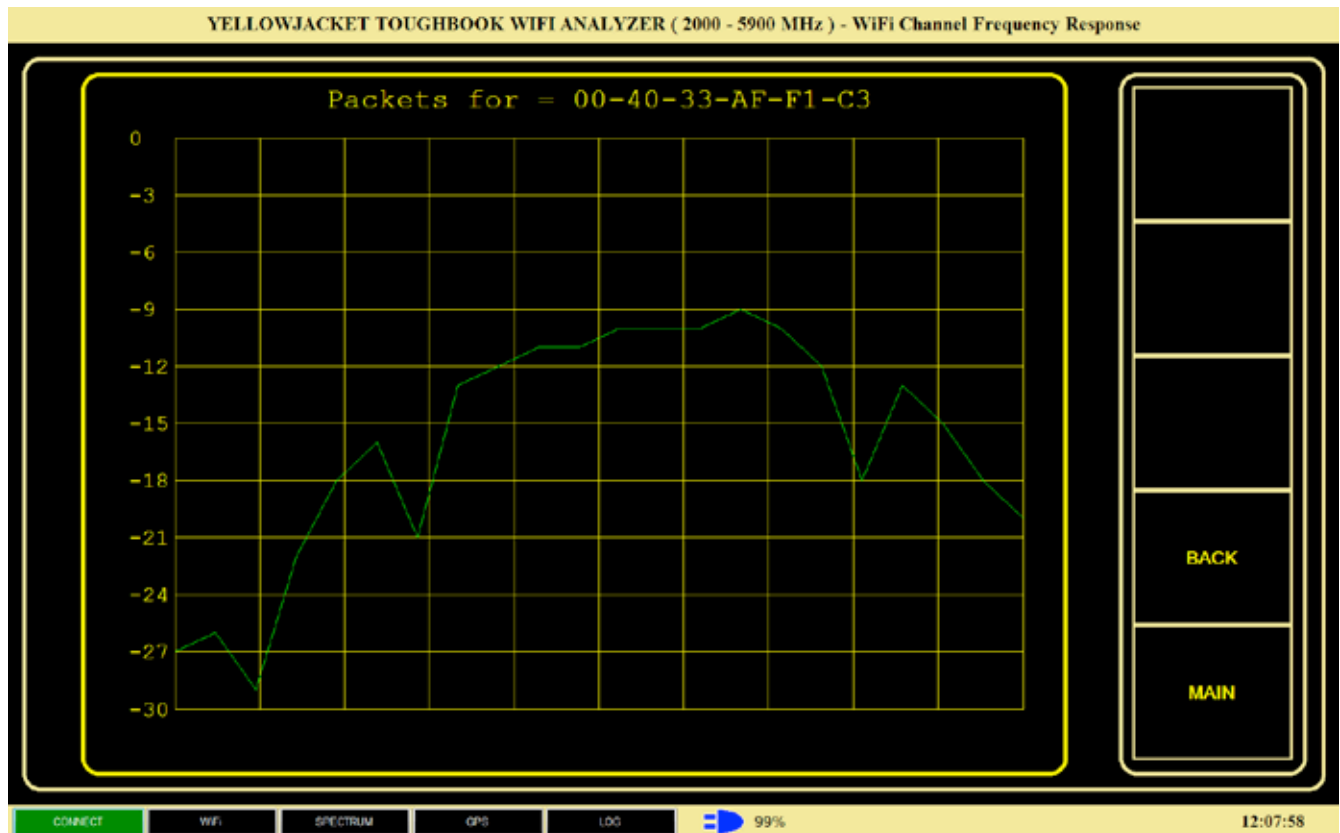
CHANNEL FREQUENCY RESPONSE

HIGH THROUGHPUT (802.11n)

The HT (High Throughput) screen will display high throughput data if the access point/client is 802.11n capable and transmitting the high throughput information elements.
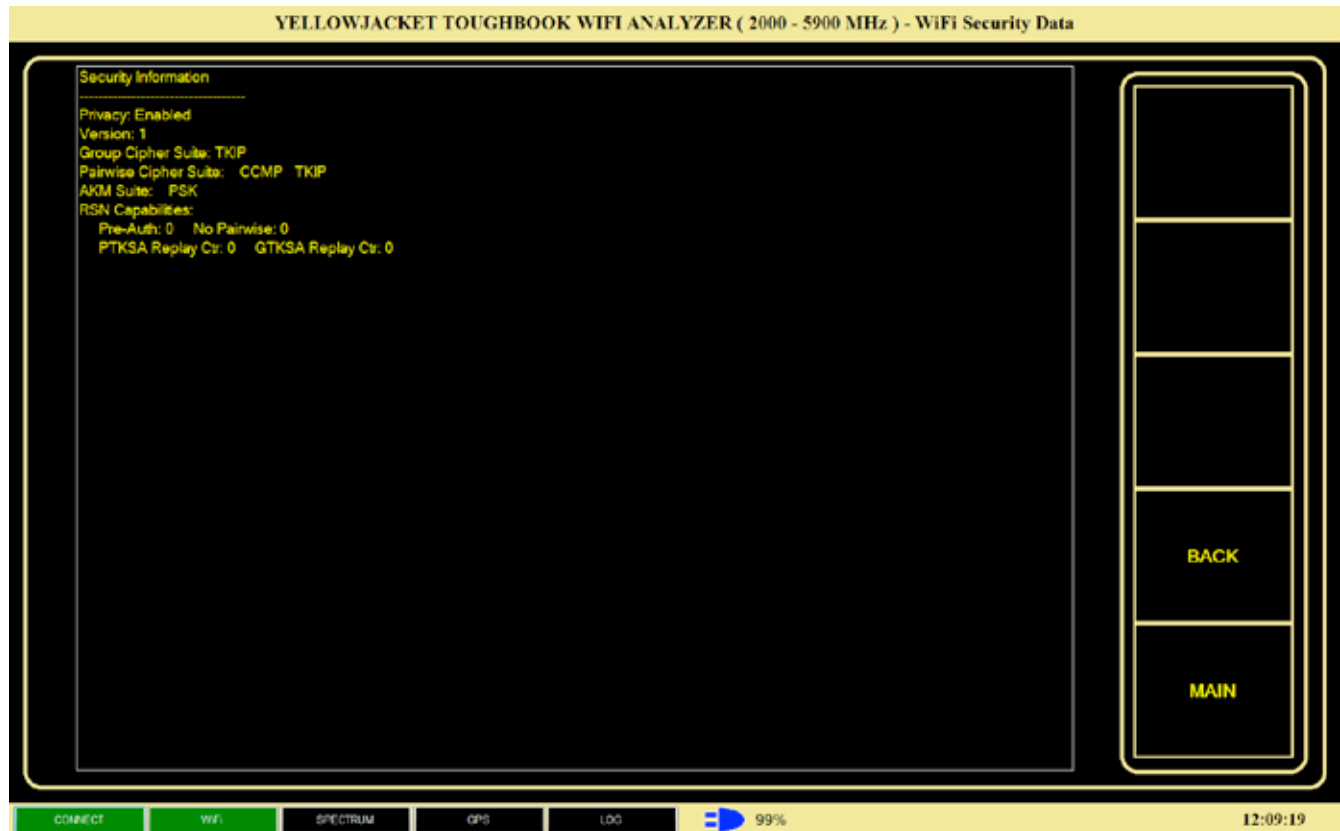
The data is a series of information. There are high throughput capabilities such as information about the 40 MHz mode. There are transmitter beamforming capabilities. This is followed by antenna selection capabilities and finally other data such as channel information. The data on this screen is not valid on a non-802.11n access point.

HIGH THROUGHPUT

SECURITY

The security screen shows any security information that can be ascertained from the packets for this MAC address. Information on security types such as WEP,TKIP,CCMP, etc. may be shown.

YELLOWJACKET TOUGHBOOK WIFI ANALYZER (2000 - 5900 MHz) - WiFi Security Data

Security Information

Privacy: Enabled
Version: 1
Group Cipher Suite: TKIP
Pairwise Cipher Suite: CCMP   TKIP
AKM Suite: PSK
RSN Capabilities:
    Pre-Auth: 0   No Pairwise: 0
    PTKSA Replay Ctr: 0   GTKSA Replay Ctr: 0

BACK

MAIN

| CONNECT | WiFi | SPECTRUM | GPS | LOG | | 99% | 12:09:19 |

SECURITY

GPS

Choosing GPS from the main menu activates a display which contains information from the internal GPS receiver. This display will show the position and current time if there is a 3D lock acquired from the GPS satellites in orbit. This information can be useful in real-time and also in post-processing as it is contained in log files.
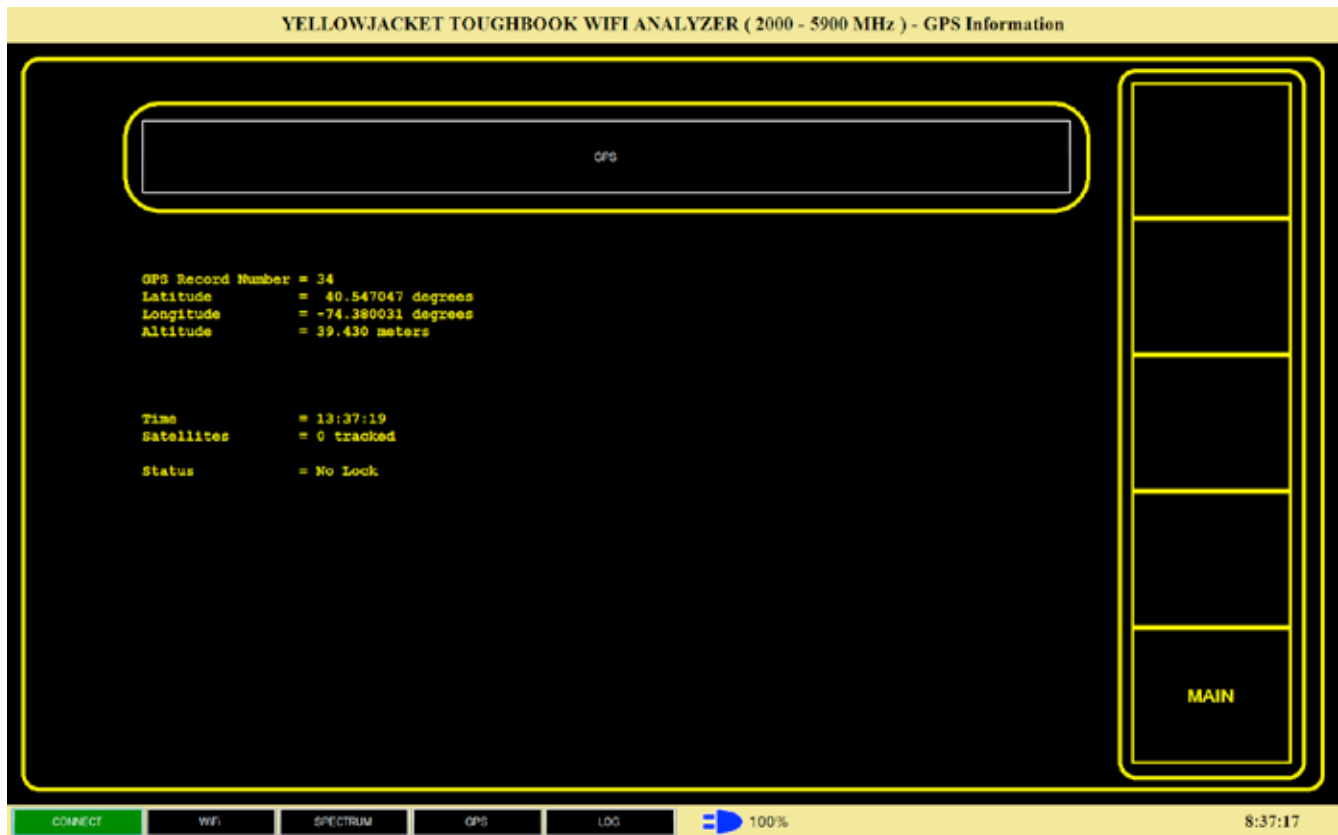
GPS

If there is a point of interest during a study, the position and time will be marked in the log file along with the data taken at that point in time.

Data Logs

Use this option of the main menu to start and stop logging of data being transmitted from the YJBANG to the computer.

There are a number of options in the option menu to facilitate the logging of data which can be post-processed later using the Processing option on the main menu. The log file contains information for either LTE or Spectrum mode as well as other information such as GPS data and receiver information.
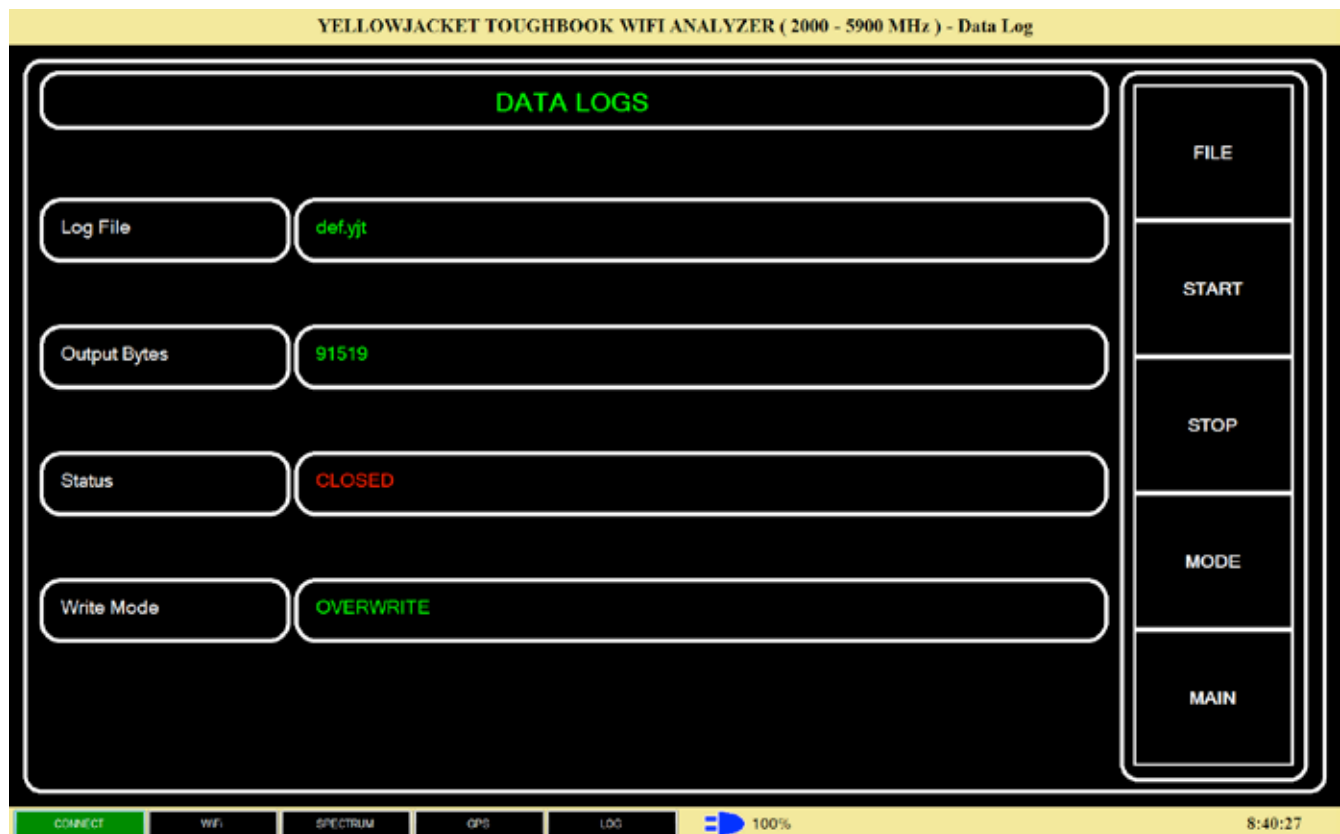
Data Logs

FILE

The file option lets the user choose where to store the data being logged.

START

Pressing this button on the option menu opens the file for logging using the current mode.

STOP

Pressing this button on the option menu closes the file to logging.

MODE

Pressing this button allows the user to decide whether or not the file will be overwritten or appended to when logging is started.

Processing

The processing option off of the main menu allows the user to convert data logged into an ASCII-delimited readable format which is suitable for various spreadsheet applications as well as other applications for further post-processing.

The main processing screen displays the current files selected, the fields and options selected, the number of bytes in the input file, and the progress of any conversion in progress.

Processing

The options menu on the right allows for the selection of the input (binary) file, the output (converted) file, the fields to be included in the output file, and the options to be used during conversion.
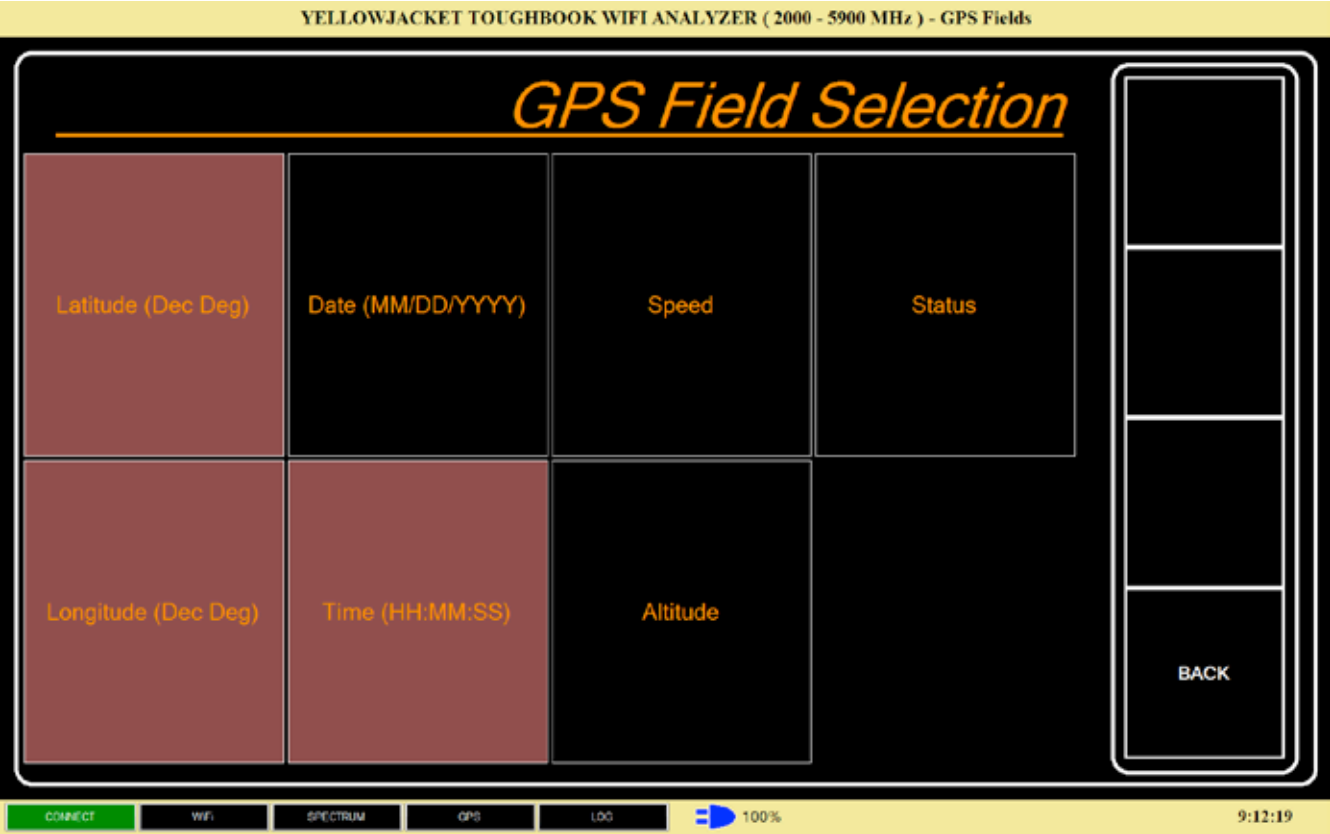
FIELDS

Choosing FIELDS from the option menu displays the 'Data Type' selection. Choose whether to convert WiFi data or SPECTRUM data. The option menu on the right the allows for the selection of individual GPS, spectrum, WiFi, or RTC (real-time clock) fields.
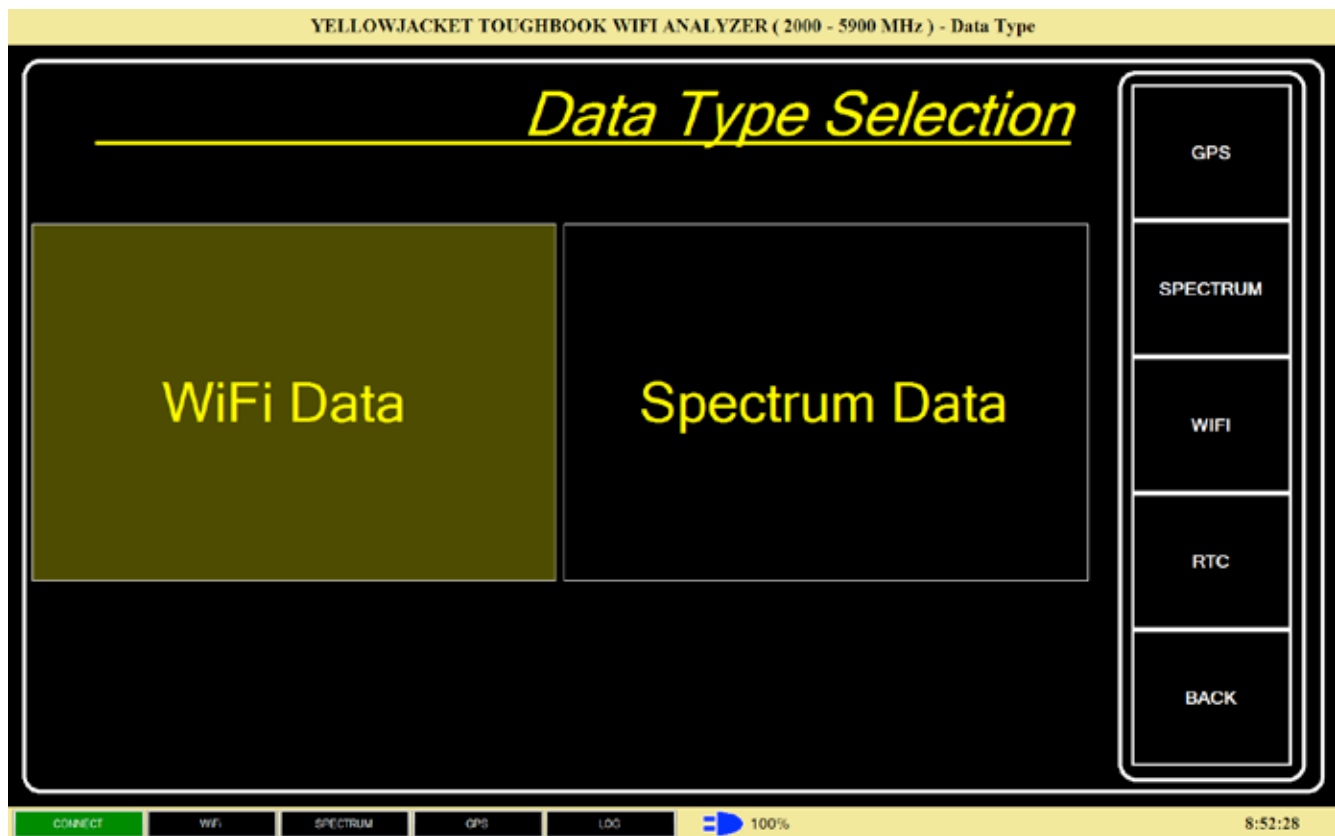
**DATA TYPE SELECTION**

GPS Field Selection

GPS fields which can be selected include latitude, longitude, date, time, speed, altitude, and status (2D or 3D lock).


GPS FIELDS

Spectrum

Spectrum fields include center, span, start and stop frequencies. Also, step size, resolution bandwidth, reference level, first frequency in the current record, count of rssi values in the current record, and the actual rssi values for the record.
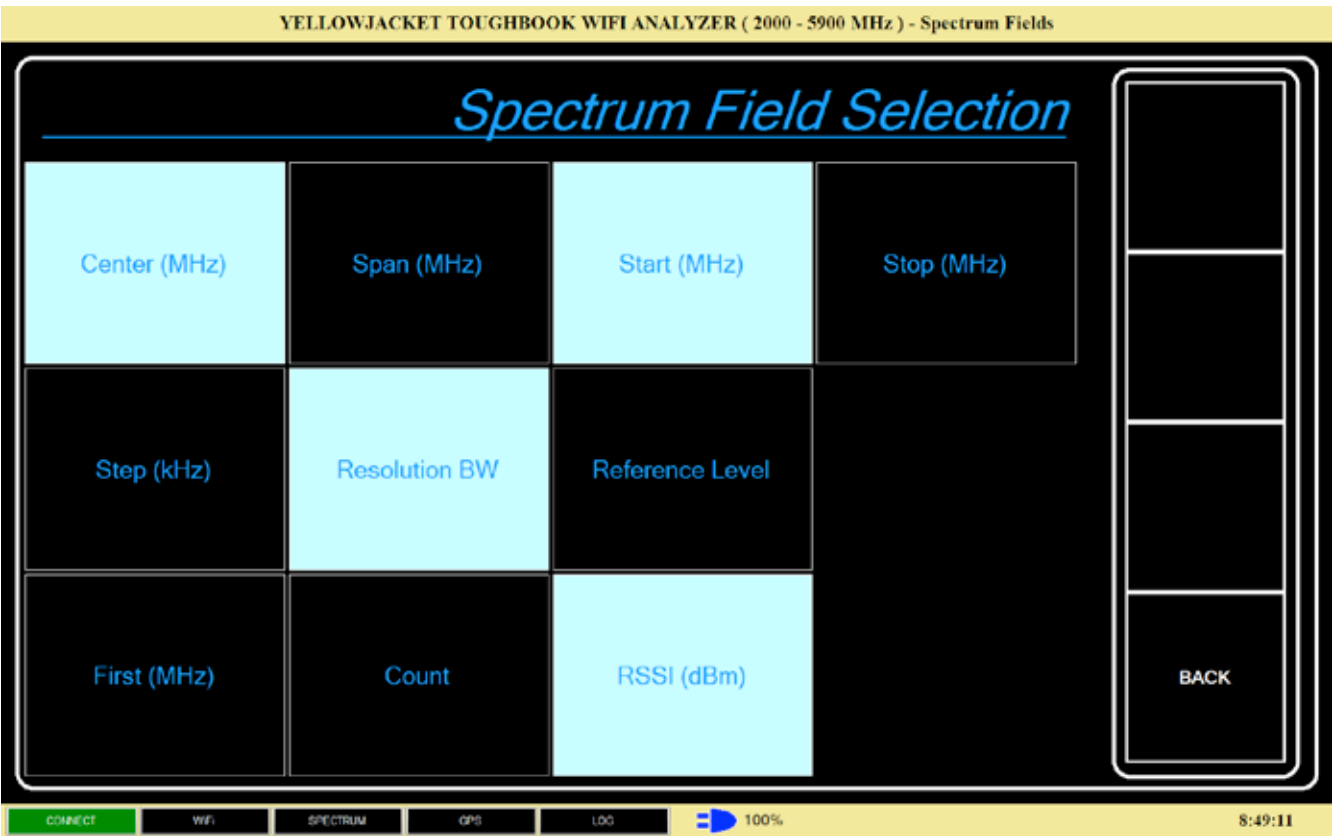
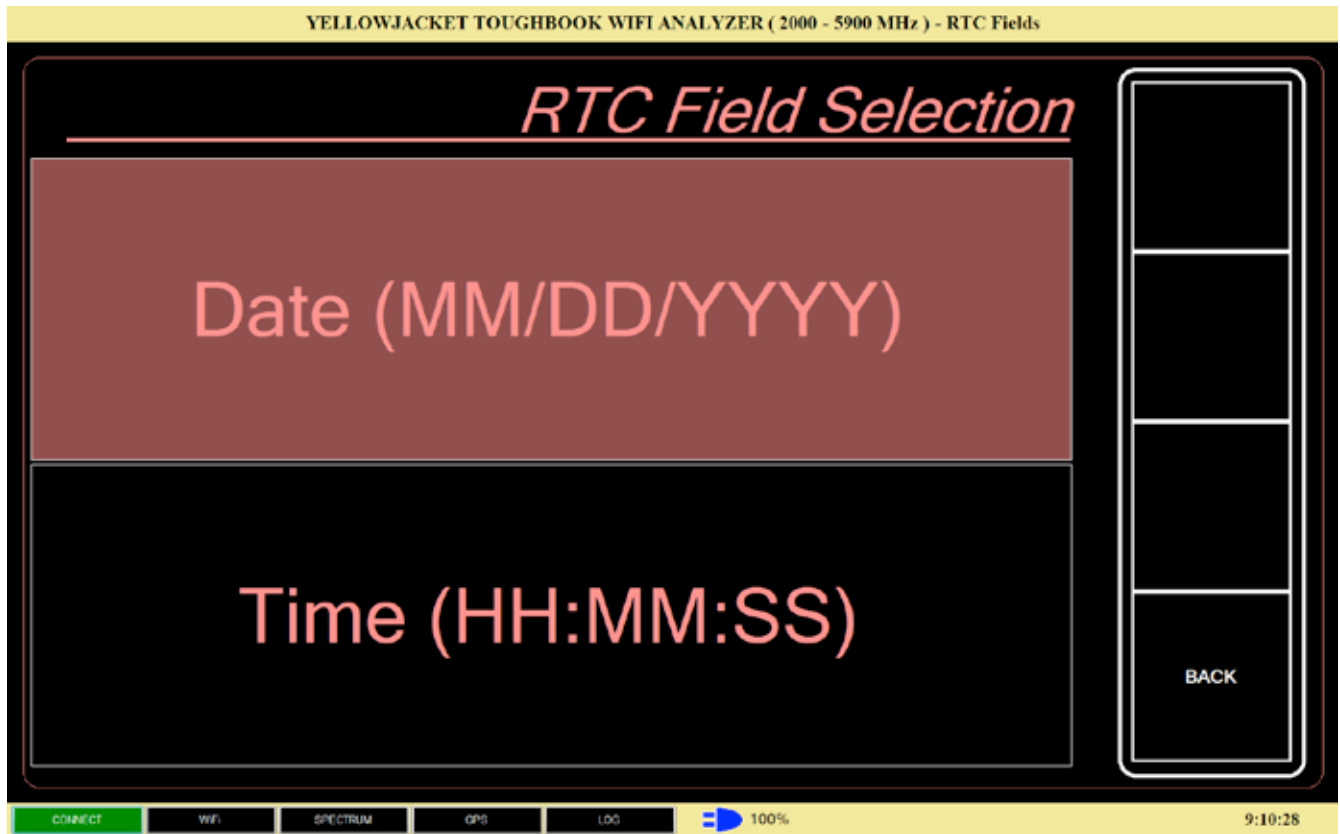

SPECTRUM FIELDS

WIFI

WiFi fields available include MAC address, SSID, RSSI, frequency, channel, signal/noise ratio, whether the packet is OFDM or DSS, the manufacturer id of the device, and whether privacy is enabled. Also, a selection is made on whether to include only basic data or multipath data.
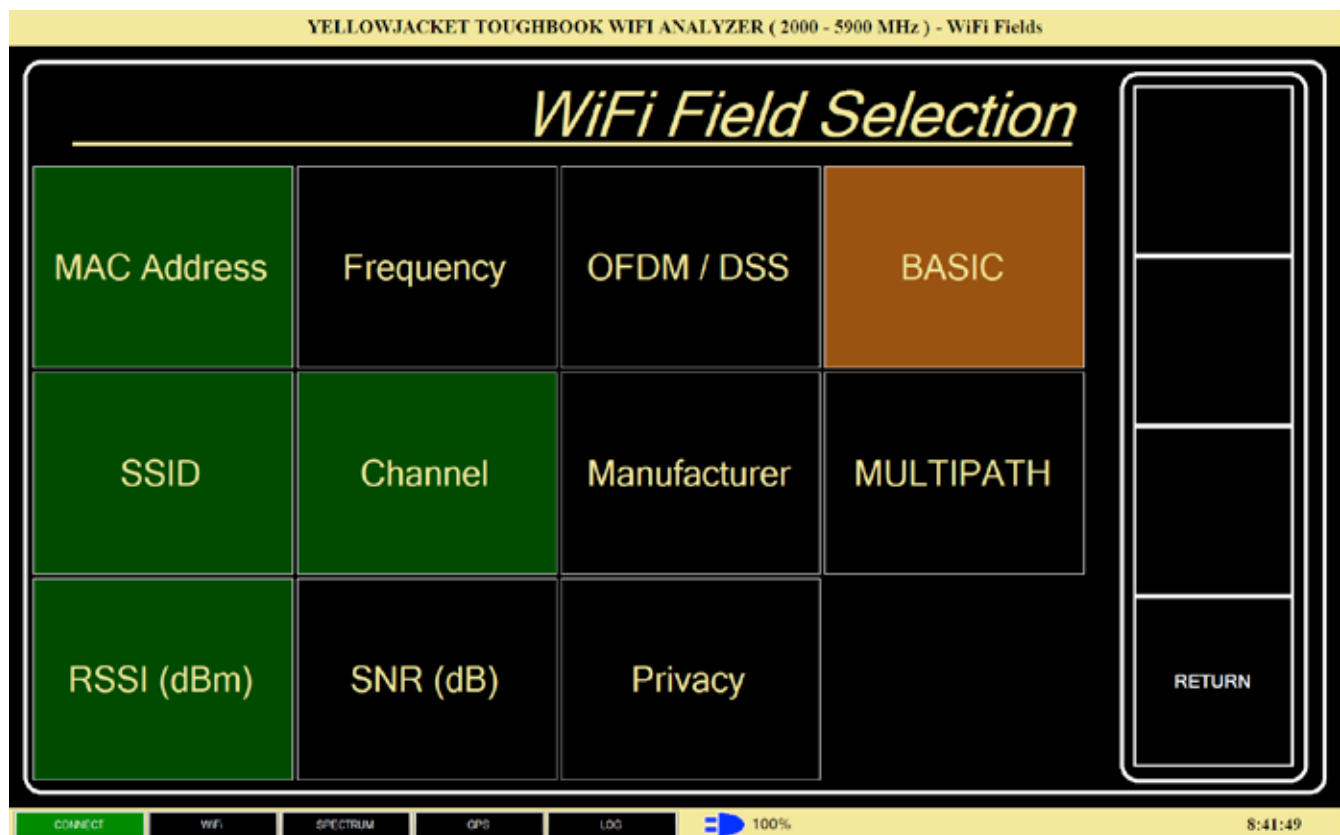

WiFi FIELDS

RTC

Here the RTC date and time can be selected. This is convenient where there is no GPS available.

RTC Field Selection

Date (MM/DD/YYYY)

Time (HH:MM:SS)

BACK

CONNECT | WiFi | SPECTRUM | GPS | LOG | 100% | 9:10:28

RTC

OPTIONS

Certain options which are selectable by pressing the options button in the option menu of the main processing display. These include the selection of a field delimiter, whether or not units will be Metric or English, and if a header record is to be included in the output file.
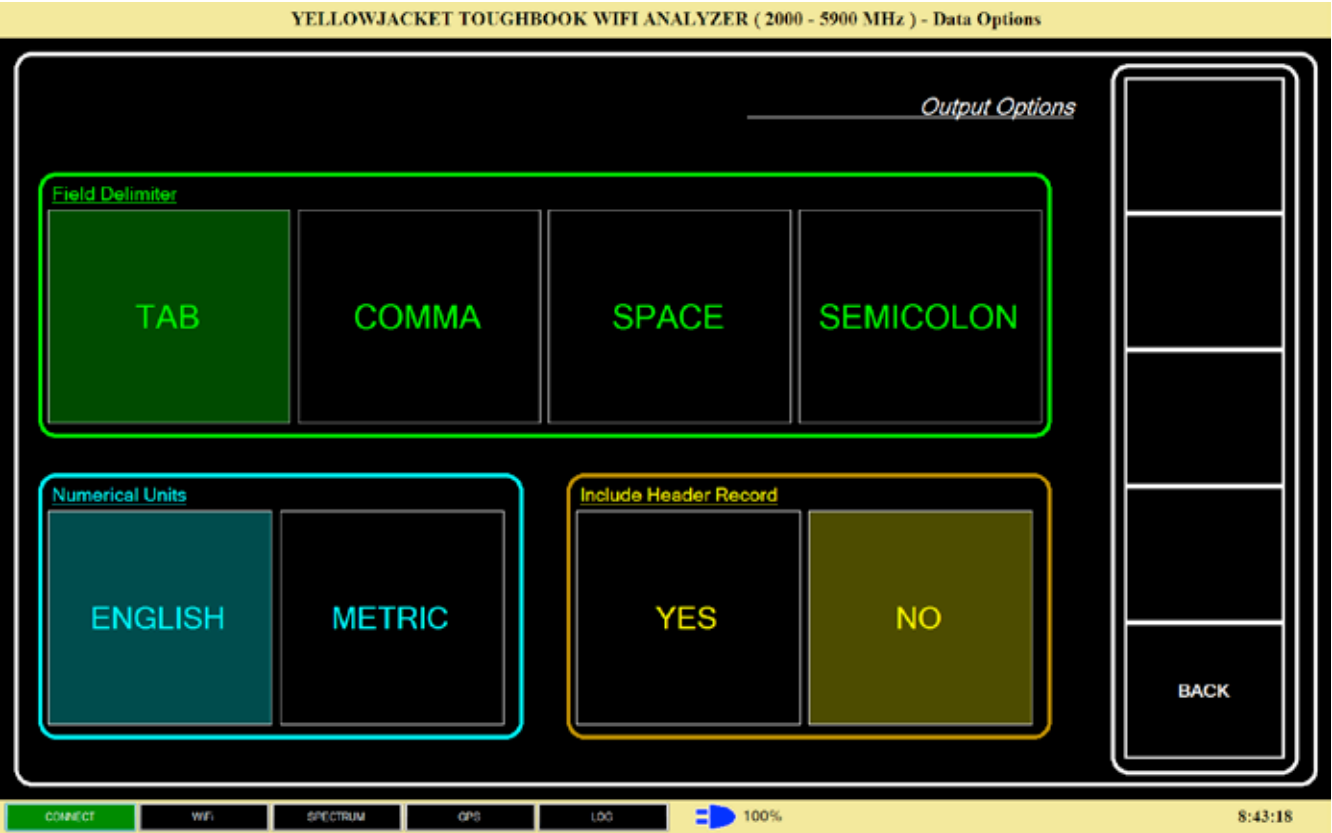
Options

System Information

The system information button on the main menu displays pertinent version and copyright information.
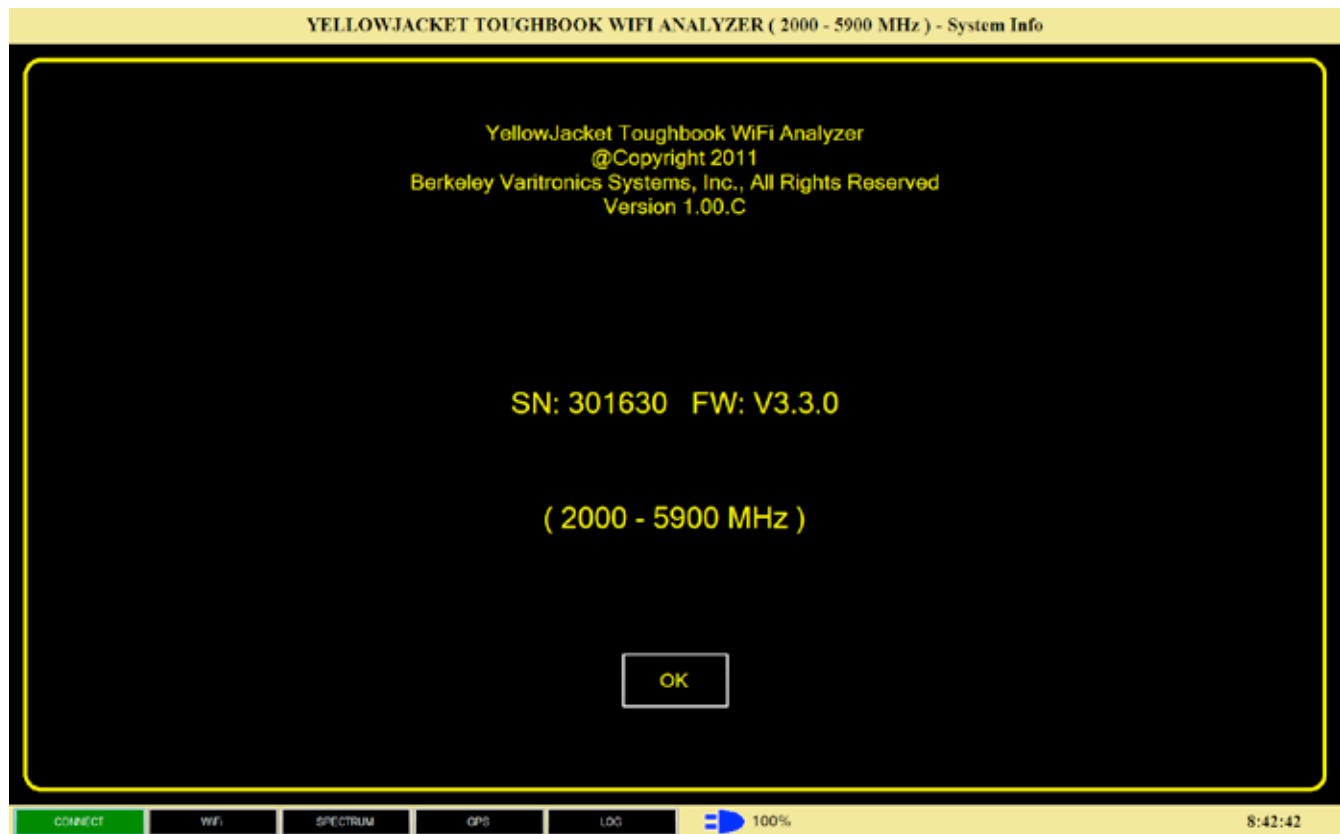
SYSTEM INFORMATION

Exit

Pressing this button from the main menu will exit the YellowJacket application. Various settings and options are saved.