

# RF Explorer® Pro



## Specifications and Datasheet

Updated to Firmware Version 1.25

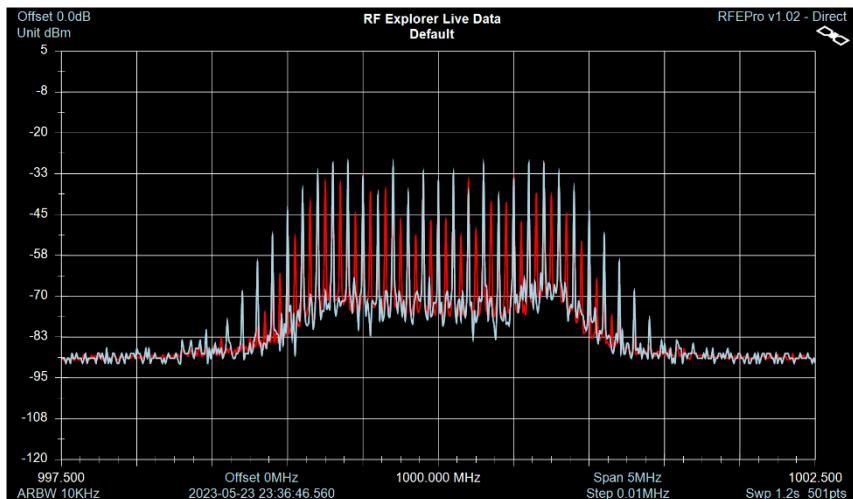
## Description of main features

RF Explorer Pro is an advanced, 3rd generation, high-performance multi-purpose instrument. With its integrated Spectrum Analyzer, Signal Tracking Generator, and Power Meter, this device offers advanced functionality in a user-friendly high-resolution touch screen interface.

The internal GPS ensures accurate RF heatmap tracking, while the high-performance CPU enables fast frequency coordination calculations, real-time interference checking, and intermodulation analysis.

Experience the convenience and power of the RF Explorer Pro for precise RF analysis and optimization.

### Feature

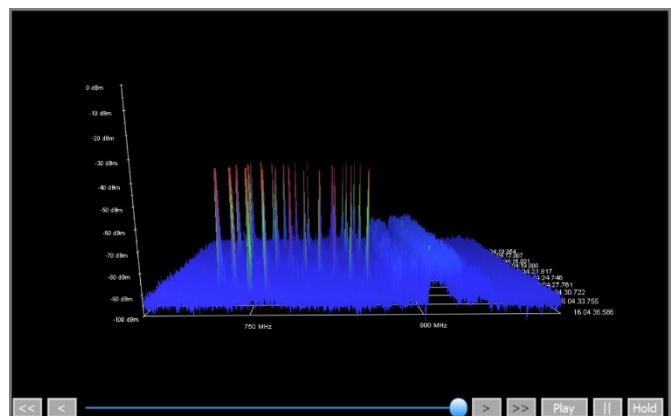
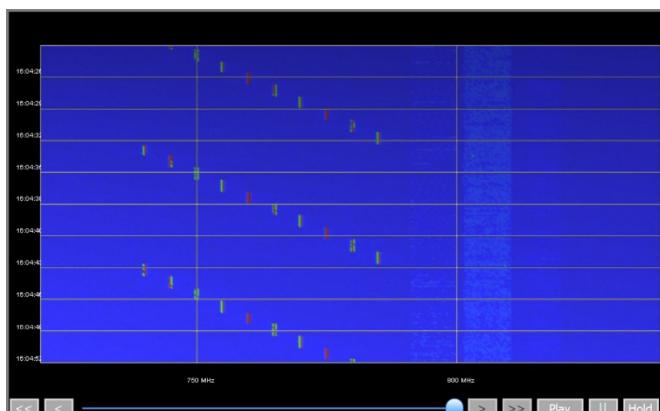


#### 3rd Generation Spectrum Analyzer

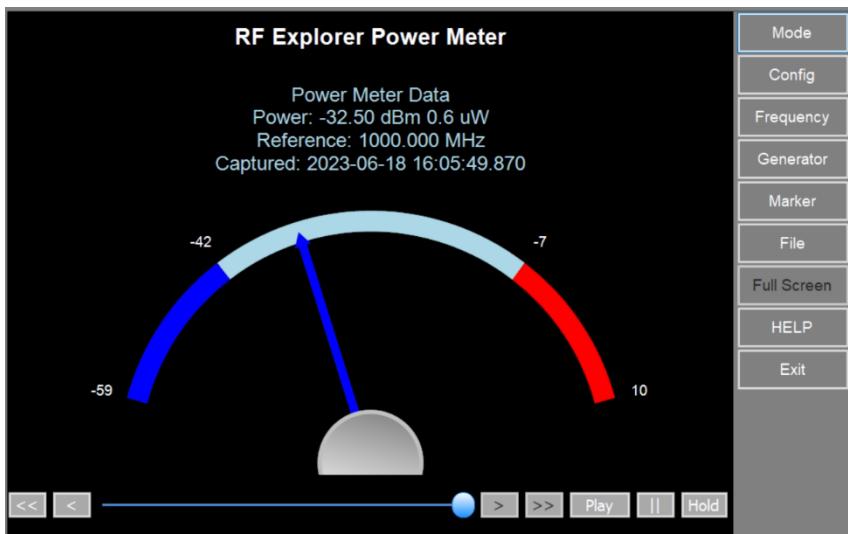
Features an advanced touch screen, high-resolution display, and state-of-the-art RF electronics for precise sweep spectrum analyzer scans.

The design of this instrument is the culmination of over 15 years of experience in developing robust RF high-frequency instruments that are cost-sensitive and widely used across the globe.

It features advanced modes such as Zero Span, Waterfall 2D and 3D, and Power Channel, offering enhanced flexibility to effectively handle a wide range of scenarios.



Capture and replay of elusive events has been made effortless, allowing for optimal monitoring of IoT, radio packets, and continuous modulated and unmodulated signals.



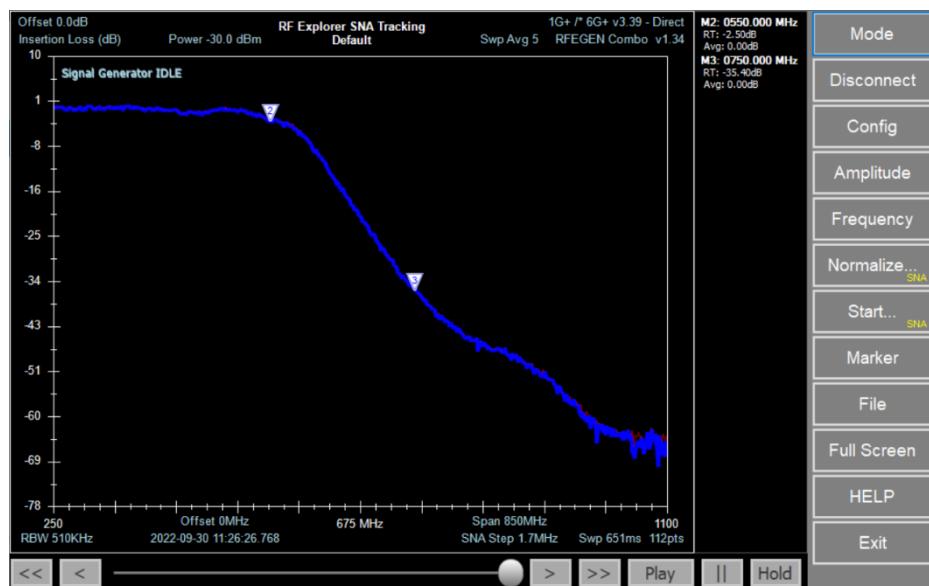
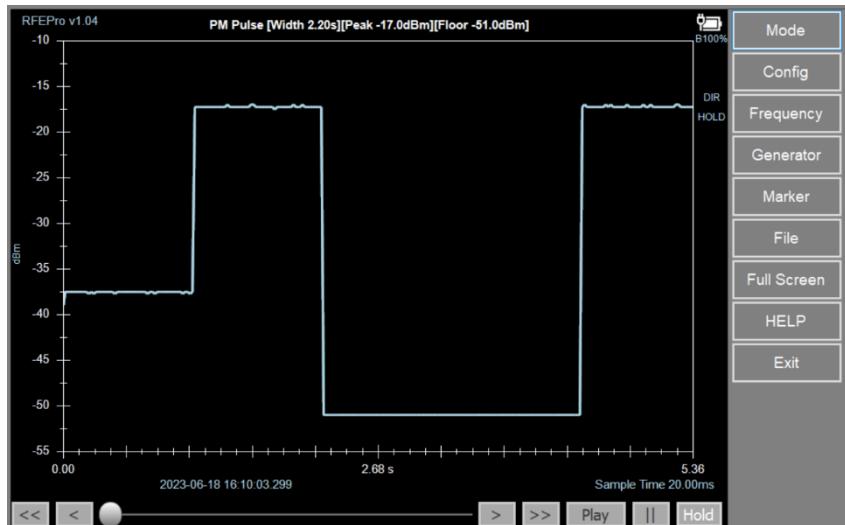
## Wideband Design

With the ability to resolve 8GHz band detection events in just 100uS, our device ensures accurate and fast detection across a wide frequency range.

## Advanced Power Meter

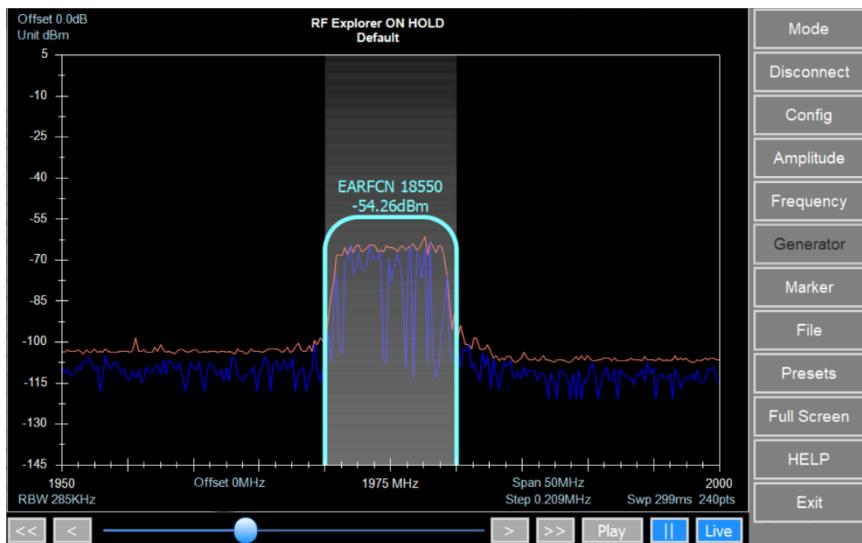
Enjoy continuous and trigger modes for precise power measurement and analysis.

The Trigger mode of this instrument enables the accurate capture of pulse and fast events that may be challenging to capture using other methods.



## Tracking Generator

This feature allows for rapid diagnostics and characterization of cables, filters, and amplifiers. When combined with a directional coupler, it can measure impedance and characterize antenna VSWR.



## Configurable Radio Standards

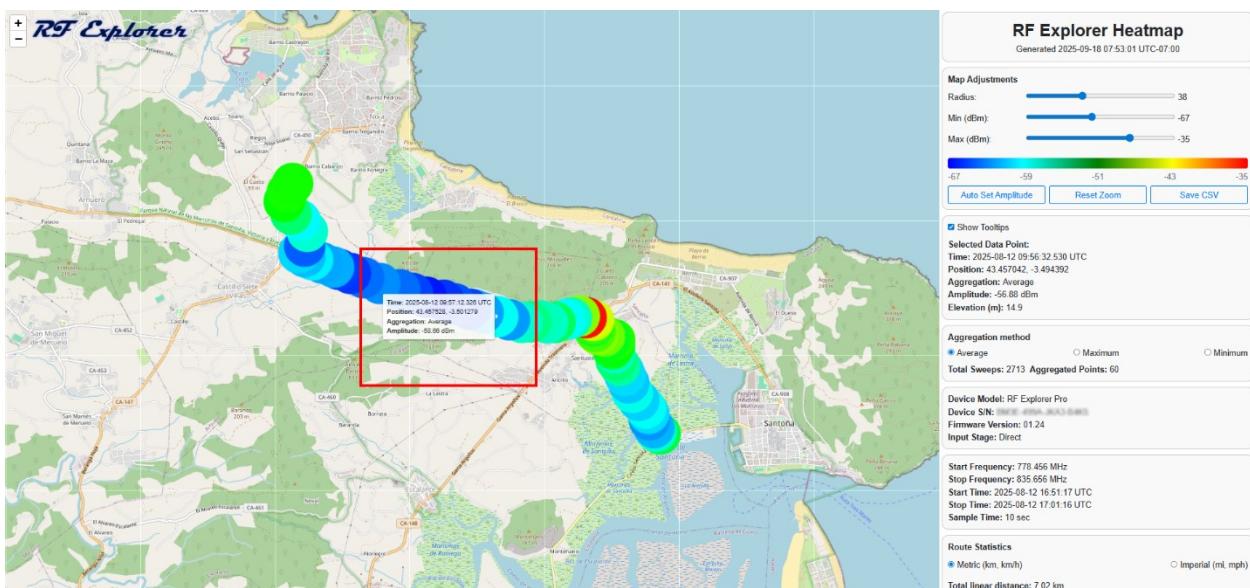
Easily configure channel measurements to match your specific radio standards, ensuring compatibility and accuracy.

- ✓ **Integrated Internal Preamplifier LNA and Attenuators:** Our device includes an integrated preamplifier LNA and attenuators, significantly increasing the dynamic range and enabling handling of low-level and high-level RF signals.
- ✓ **Cable Tester<sup>1</sup>:** Perform instant and easy checks of RF cables of any length, ensuring their proper functioning.

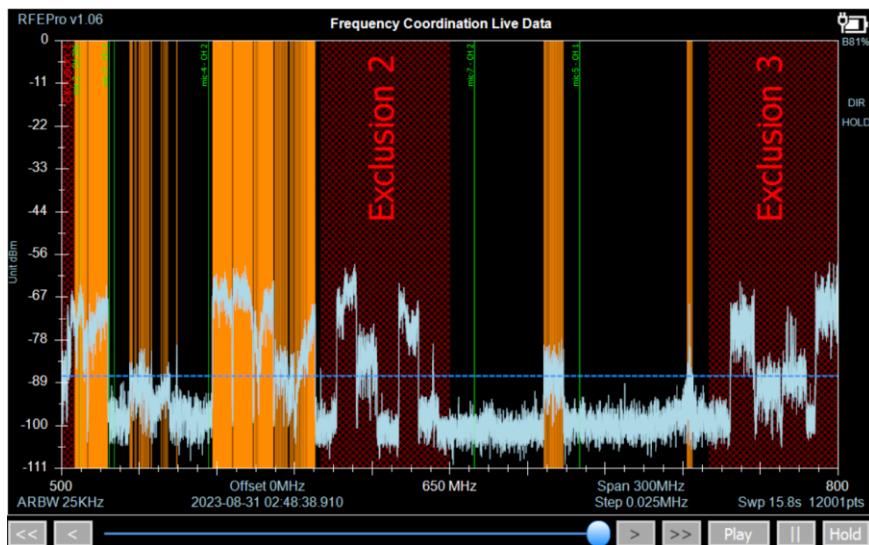
### Heatmap Coverage Map<sup>1</sup>

Utilize the external GPS assistance and internal manual operation to measure signal strength on the go, creating a heatmap of coverage areas.

To display geolocated data positions on a map, the current implementation of this feature requires a computer or mobile device connected to the Internet and access to free OpenStreetMap service.



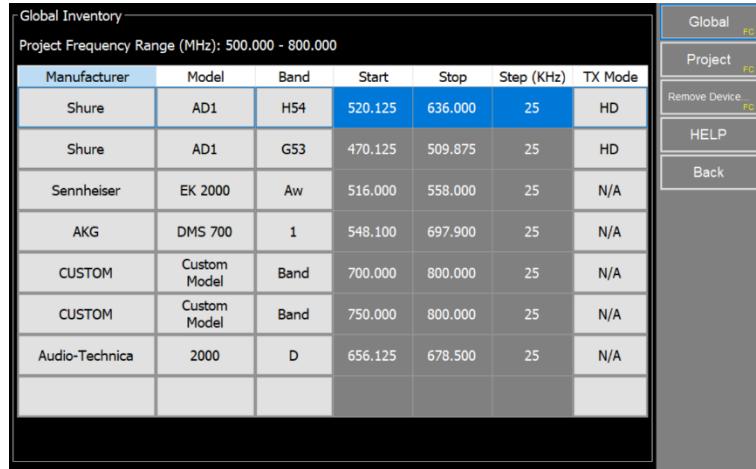
<sup>1</sup> This Feature Requires software license



### Frequency Coordination<sup>1</sup>:

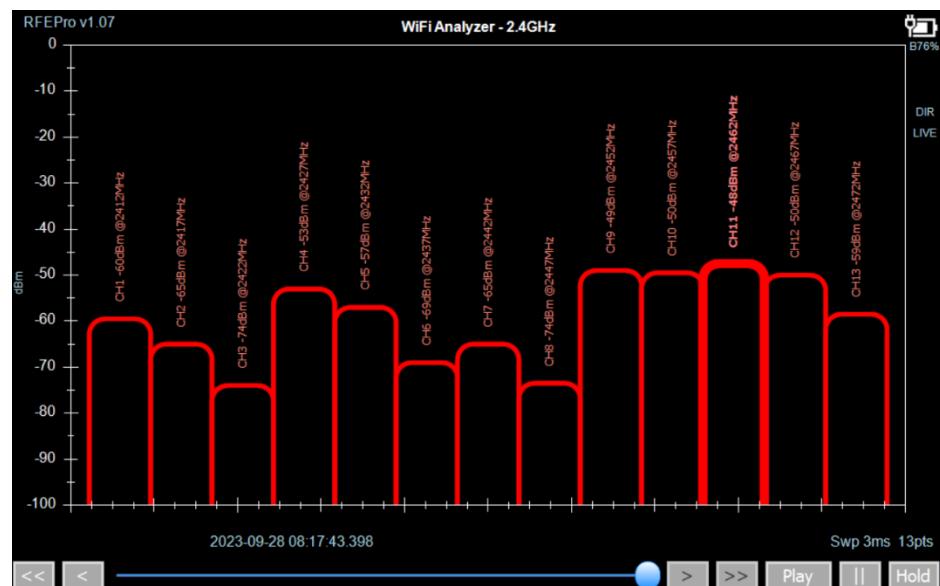
Advanced frequency coordination tailored for A/V, wireless microphones, and in-ear monitors, this feature minimizes interference and intermodulation, and provides continuous monitoring.

The provided database supports the majority of commercially available wireless devices. Additionally, users can add custom configurations that are retained for future use. The straightforward process to export CSV files, coupled with the efficient coordination algorithm, renders this tool invaluable for any venue, no matter its complexity or dynamism.



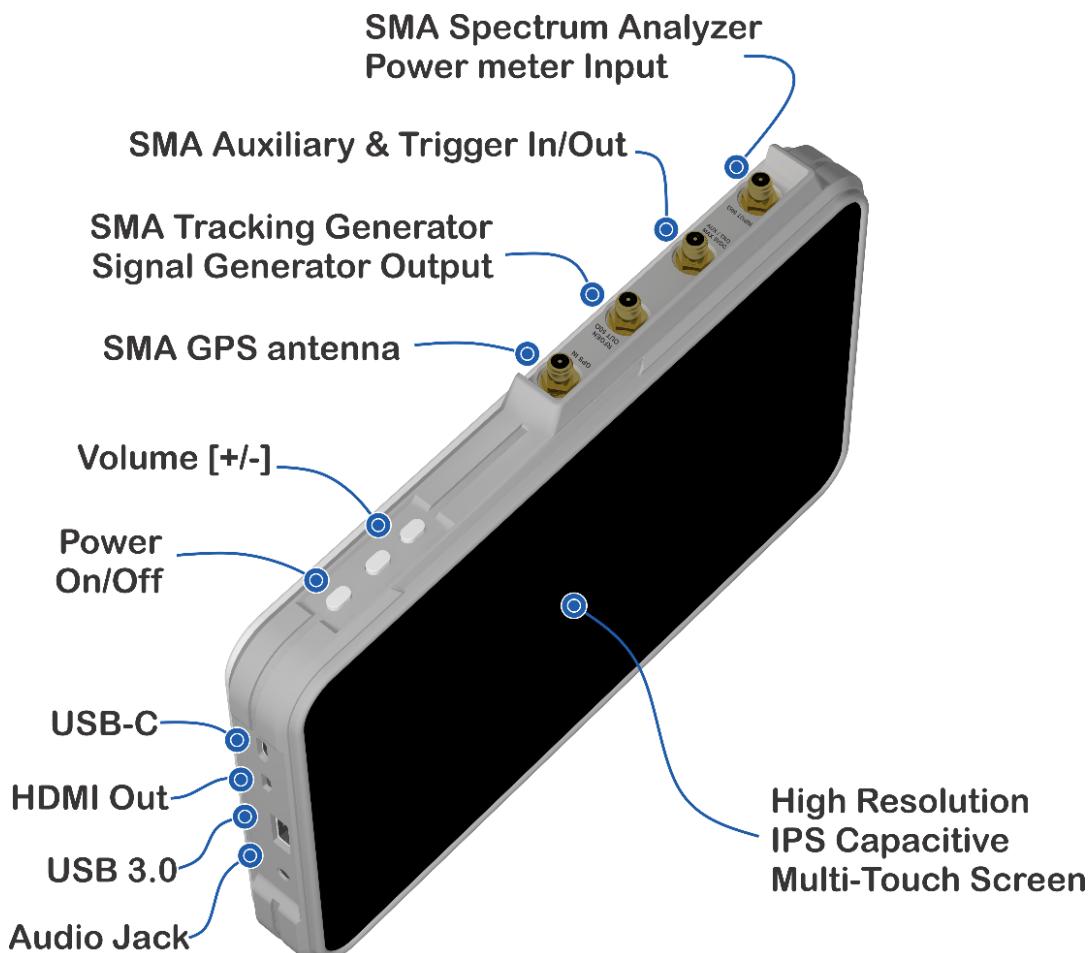
### WiFi Analyzer

It offers the capability to detect signals present on any 2.4/5.8/7GHz band channel, enabling accurate identification of interference, collisions, and noise in WiFi environments.



- ✓ **Record/Save/Replay Spectrum Data:** Automatically save scan data on RAM for easy replay of any event. Additionally, the data can be manually or automatically saved in binary and CSV formats for later use.
- ✓ **Continuous Monitoring and Alerting:** Stay informed with reliable alerts, including configurable limit lines, to ensure you never miss critical events.
- ✓ **Export Data to WSM/WWB6/Excel/Matlab:** Seamlessly export all captured data to a USB drive for use in other software applications such as WSM, WWB6, SoundBase, Audio-Technica, Excel, or MATLAB.
- ✓ **Remote Network Control:** Easily manage your RF Explorer Pro over any network. Just connect using a USB-to-Ethernet adapter and set up via VNC. Whether you're using a computer or a mobile device, any brand or model will allow you to monitor and control your system remotely.
- ✓ **HDMI Output:** Connect the RF Explorer Pro to an external display for monitoring RF performance in real time during an event. This is also useful for system configuration and testing to gauge wireless microphone or in-ear monitor coverage range.

*For more details on connectors check this [online video](#)*



## Spectrum Analyzer Specifications

Parameter	Value Range
Frequency range	<b>15MHz to 3.3GHz (baseline)</b> <b>15MHz to 6.1GHz (requires license 6G)</b> <b>15MHz to 7.5GHz (requires license 7G)</b>
Frequency Span	<b>0 (zero span)</b> <b>500kHz to 6GHz (sweep)</b>
RBW	<b>3kHz – 2.5MHz</b>
VBW	<b>Automatic</b>
Low Frequency Support	<b>100kHz – 240MHz</b> <i>with external RF Explorer Upconverter module (not included)</i>
Frequency resolution	<b>1kHz</b>
Sweep Time	<b>3GHz / 280ms</b> <i>With RBW 2.5MHz</i>
Sweep Points	<b>512-50,000</b>
Frequency stability (typical)	<b>TCXO ±0.5ppm</b>
Amplitude stability and accuracy (typical)	<b>±1.5dB</b>
Factory Calibration	<b>3K reference points</b>
Frequency accuracy (Internal reference)	<b>TCXO ±1ppm</b>
Aging	<b>±1ppm/year</b>
Displayed Frequency accuracy	<b>Span/(Sweep Points-1)</b>
Amplitude resolution	<b>0.5dB</b> <i>Future firmware upgrade will enable 0.25dB</i>
Dynamic range (Depending on RBW and Band)	<b>Direct: -110dBm to +10dBm</b> <b>Preamplifier LNA: -130dBm to -30dBm</b> <b>Attenuator: -80dBm to +33dBm</b>
Absolute Max input power	<b>+33dBm internal Attenuator selected</b>
Display Average Noise Level	<b>-130dBm</b> <i>typical LNA</i>
Noise Floor	<b>-160dBm/Hz</b> <i>typical LNA</i>
WiFi Analyzer	<b>2.4Ghz / 5.8GHz / 6GHz / 7GHz</b>
GPS capture	<b>Requires 5V active antenna (not included)</b>
GPS Heatmap	<b>Captures in sync with Sweep data</b> <i>Requires Heatmap License</i> <i>Evaluation mode for 10 usages included</i>

Parameter	Value Range
CPU	Advanced Low Power Intel 64bits
DSP	High Performance Dual DSP 32bits+16bits
Save/Replay	100MB Sweeps on Memory Unlimited Sweeps on Files
File Export	Compatible CSV and Binary formats <i>Suitable for WSM/WWB6/Excel/Matlab</i>

## Wideband Power Meter Specification

Parameter	Value Range
Frequency range	<b>10MHz to 8GHz</b>
Dynamic range (Depending on RBW and Band)	Direct: -60dBm to +10dBm Preamplifier LNA: -130dBm to -30dBm Attenuator: -80dBm to -10dBm
Operational Modes	Continuous Trigger
Event Detection	100µS
Samples	2-1024 Trigger Samples 100,000 Captures on Memory
Amplitude resolution	0.25dB
Amplitude stability and accuracy (typical)	±1.5dB
Factory Calibration	1K reference points

## Signal Tracking Generator Specification

Parameter	Value Range
Frequency range	<b>24MHz to 6GHz</b> shared license with spectrum analyzer mode
Frequency step/resolution	1kHz
Frequency stability (typical)	TCXO $\pm 0.5\text{ppm}$
Output power accuracy	Typical $\pm 3\text{dB}$
Output power stability	Typical $\pm 0.5\text{dB}$
Output amplitude settling time	500 $\mu\text{S}$
Factory Calibration	1K reference points
Frequency accuracy (internal reference)	TCXO $\pm 1\text{ppm}$
Output power range (nominal)	-40dBm to -30dBm in 3dB steps -10dBm to 0dBm in 3dB steps
Operational Modes	CW Tracking SNA Frequency Sweep (future firmware) Amplitude Sweep (future firmware)
Harmonics	Typical $< -10\text{dBc}$
Spurious	Typical $< -50\text{dBc}$
Frequency Sweep settling	< 5ms
Amplitude Sweep settling	< 500 $\mu\text{S}$
Sweep hops range	unlimited
Tracking Speed	>500pts/sec

## Electrical and Mechanical Specification

Parameter	Value Range
Remote Display	Standard multiplatform VNC Compatible
Video Output	Micro HDMI port
USB	Type A USB 3.0
Network	Ethernet with USB adapter <i>Adapter Not Included</i>
Remote Control	VNC multiplatform free viewer
Audio	Internal Speaker Audio Jack 3.5mm
Micro SD card	Up to 64GB <i>SD Card Not Included</i>
Operating temperature	5-35C
Operating humidity	Max 90%
RF Connector type	SMA 50 ohms
Display Technology	Anti-glare 8" IPS TFT Capacitive Touchscreen
Display Resolution	1280x800 pixels 16.7M color
Display Luminance	250 cd/m <sup>2</sup>
Display Contrast ratio	800:1
Viewing Angle	85 deg
Weight	570 g
Size	215x140x25mm
Charge	USB-C 5VDC 2A <i>Charger Not Included</i>
Charge Time	Typical 3hs
Internal Battery	Lithium Ion 4500mAh
Battery Lifetime	3.5 – 5hs <i>Depending on operational mode</i>
Holder	Back Removable Holder
Tripod Support	Compatible with standard 1/4-20 Camera tripod
Certification	CE/FCC/RoHS/MSDS
Included Antennas	UHF: 400MHz-900MHz (gray) Wideband: 900MHz-6GHz (black)
Included Cable	USB-C 2A rated cable, 1m length

## Disclaimer

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For warranty service or repair, this product must be returned to a service facility designated by RF Explorer Technologies. The buyer is responsible for prepaying the shipping charges to RF Explorer Technologies, and RF Explorer Technologies will cover the shipping charges to return the product to the buyer. However, the buyer is responsible for all shipping charges, duties, and taxes for products returned to RF Explorer Technologies from another country.

## FCC and CE regulations

RF Explorer Pro is a Test and Measurement device, and therefore compatible with US FCC regulation 47 CFR Part 15.103(c).

RF Explorer Pro is certified for CE compliance under regulations EN/IEC61236 and EN/IEC61000.

RF Explorer Technologies SL holds numerous design patents for the product.

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