

# Signal Hound

SM435C Real-Time Spectrum Analyzer



Signal Hound designs and builds powerful, affordable spectrum analyzers and signal generators for engineers, operators and RF professionals around the globe.

## REAL-TIME SPECTRUM ANALYSIS UTILIZING A 10 GIGABIT SFP+ PORT- UNPARALLELED SPEED AND PERFORMANCE.

The SM435C is a high-performance spectrum analyzer and monitoring receiver with a 10 Gigabit Ethernet SFP+ port, which enables the SM435C to communicate with a PC over long distances using fiber optic cable. Tuning from 100 kHz to 43.5 GHz, the analyzer has 160 MHz of instantaneous bandwidth (IBW), 110 dB of dynamic range, 1 THz/sec sweep speed at 30 kHz RBW, and ultra-low phase noise to rival even the most expensive spectrum analyzers on the market. As a front-end spectrum analyzer and monitoring receiver, the SM435C provides accurate RF data when it's needed most.

### APPLICATIONS

- General Purpose RF Test & Measurement
- EMC pre-compliance
- Phase Noise Characterization
  - EVM
- Channel Characterization
  - CCDF
- WiFi Characterization
- BlueTooth Characterization
- Calibration
- Manufacturing Test
- RF Power Measurement
- Demodulation
- Antenna Pattern Measurement

### FEATURES

- 1 THz/sec Sustained Sweep Speed
- 110 dB of Dynamic Range
- 20 MHz to 43.5 GHz Sub-Octave Preselector
- Spectrum Monitoring
- Ultra-low Phase Noise
- Real-time Analysis Features



Battle Ground, WA 98604 · USA · (360)313-7997  
SignalHound.com · © 2023

# SM435C Real-Time Spectrum Analyzer & Monitoring Receiver

May 2023

Preliminary Specifications																						
Frequency Range	100 kHz to 43.5 GHz																					
Sweep Speed	Speed RBW <ul style="list-style-type: none"> <li>• 1THz/sec <math>\geq 30</math> kHz</li> <li>• 160 GHz/sec 10 kHz</li> <li>• 18 GHz/sec 1 kHz</li> </ul>																					
Displayed Average Noise Level (DANL) REF LEVEL $\leq -20$ dBm	Input Frequency Range dBm/Hz <ul style="list-style-type: none"> <li>• 100 kHz to 160 MHz -156 dBm</li> <li>• 160 MHz to 2.2 GHz -159 dBm</li> <li>• 2.2 GHz to 24 GHz -155 dBm</li> <li>• 24 GHz to 36 GHz -153 dBm+0.5 dB/GHz</li> <li>• 36 GHz to 43.5 GHz -147 dBm+1.1 dB/GHz</li> </ul>																					
I/Q Acquisition Modes	Calibrated Streaming I/Q: up to 160MHz of selectable I/Q streaming bandwidth																					
Timebase Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 5 \times 10^{-10}</math> when locked to GPS</li> <li>• Holdover of <math>\pm 5 \times 10^{-9}</math>/day for aging (<math>\pm 2 \times 10^{-8}</math> first day typ)</li> <li>• Holdover of <math>\pm 1 \times 10^{-8}</math> for temperature over <math>-40^{\circ}\text{C}</math> to <math>65^{\circ}\text{C}</math> (typ)</li> </ul>																					
System Noise Figure (typ)	<ul style="list-style-type: none"> <li>• 12 dB over 700 MHz to 2.5 GHz</li> <li>• 15 dB from 2.5 GHz to 24 GHz</li> <li>• 18 dB+0.5 dB/GHz from 24 GHz to 40 GHz</li> <li>• 26dB+2.0 dB/GHz from 40 GHz to 43.5 GHz</li> </ul>																					
Linearity	<table border="0"> <tr> <td><math>IP_2</math></td> <td><math>IP_3</math></td> </tr> <tr> <td>• 100 kHz to 20 GHz +75 dBm</td> <td>• 100 kHz to 4 GHz +28 dBm</td> </tr> <tr> <td>• 20 GHz to 43.5 GHz +70 dBm</td> <td>• 4 GHz to 6 GHz +23 dBm</td> </tr> <tr> <td></td> <td>• 6 GHz to 43.5 GHz +20 dBm</td> </tr> </table>	$IP_2$	$IP_3$	• 100 kHz to 20 GHz +75 dBm	• 100 kHz to 4 GHz +28 dBm	• 20 GHz to 43.5 GHz +70 dBm	• 4 GHz to 6 GHz +23 dBm		• 6 GHz to 43.5 GHz +20 dBm													
$IP_2$	$IP_3$																					
• 100 kHz to 20 GHz +75 dBm	• 100 kHz to 4 GHz +28 dBm																					
• 20 GHz to 43.5 GHz +70 dBm	• 4 GHz to 6 GHz +23 dBm																					
	• 6 GHz to 43.5 GHz +20 dBm																					
Amplitude Accuracy	<table border="0"> <tr> <td>100 kHz to 6 GHz</td> <td>6 GHz to 20 GHz</td> <td>RBW filter shape</td> </tr> <tr> <td>• <math>\pm 2.0</math> dB</td> <td>• <math>\pm 3.0</math> dB</td> <td>• Flat-Top windowing</td> </tr> </table>	100 kHz to 6 GHz	6 GHz to 20 GHz	RBW filter shape	• $\pm 2.0$ dB	• $\pm 3.0$ dB	• Flat-Top windowing															
100 kHz to 6 GHz	6 GHz to 20 GHz	RBW filter shape																				
• $\pm 2.0$ dB	• $\pm 3.0$ dB	• Flat-Top windowing																				
Residual Responses REF LEVEL $\leq -20$ dBm	<ul style="list-style-type: none"> <li>• 100 kHz to 6 GHz -110 dBm</li> <li>• 6 GHz to 15 GHz -100 dBm</li> <li>• 15 GHz to 44 GHz -90 dBm</li> </ul>																					
SSB Phase Noise at 1GHz Center Frequency	<table border="0"> <tr> <td>Offset</td> <td>Frequency</td> <td>dBc/Hz</td> </tr> <tr> <td>• 10 Hz</td> <td></td> <td>-76</td> </tr> <tr> <td>• 100 Hz</td> <td></td> <td>-108</td> </tr> <tr> <td>• 1 kHz</td> <td></td> <td>-125</td> </tr> <tr> <td>• 10 kHz</td> <td></td> <td>-136</td> </tr> <tr> <td>• 100 kHz</td> <td></td> <td>-138</td> </tr> <tr> <td>• 1 MHz</td> <td></td> <td>-138</td> </tr> </table>	Offset	Frequency	dBc/Hz	• 10 Hz		-76	• 100 Hz		-108	• 1 kHz		-125	• 10 kHz		-136	• 100 kHz		-138	• 1 MHz		-138
Offset	Frequency	dBc/Hz																				
• 10 Hz		-76																				
• 100 Hz		-108																				
• 1 kHz		-125																				
• 10 kHz		-136																				
• 100 kHz		-138																				
• 1 MHz		-138																				
Lo Leakage at RF Input	<ul style="list-style-type: none"> <li>• 100 kHz to 6 GHz -80 dBm</li> <li>• 6 GHz to 24 GHz -50 dBm</li> <li>• 24 GHz to 43.5 GHz -75 dBm</li> </ul>																					
Spurious Mixer Responses	<ul style="list-style-type: none"> <li>• 100 kHz to 6 GHz -55 dBc</li> <li>• 6 GHz to 24 GHz -45 dBc</li> <li>• 24 GHz to 43.5 GHz -45 dBc</li> </ul>																					
Sub-Octave Preselector Filters	20 MHz to 43.5 GHz																					
Synchronization	External trigger, GPIO, Internal GPS (+/-40ns)																					
Operating Temperature	Standard (passive cooling) 32° F to 122° F (0°C to +50°C)																					
Size and Weight	• 10.45" x 7.2" x 2.15" (265mm x 183mm x 55mm) • 7.77 Ibs. (3.52 kg)																					
Power Consumption	• 9 to 16 VDC • 33 Watt Maximum																					
Interface	10GbE SFP+ port																					
System Requirements	Windows or Linux Operating System, x64_86 architecture																					
Ordering Options																						
Standard, Temperature Range 32° F to 122° F (0°C to +50°C)																						
Option 1, Temperature Range -40° F to 149° F (-40°C to +65°C)																						
Option-80 - IF Output Option (800MHz BW of IF tunable between 24GHz- 43.5GHz)																						