



## Required Hardware by Application

Application	Required Hardware				
	SA <sup>(1)</sup>	TG <sup>(2)</sup>	P20 <sup>(3)</sup>	AK <sup>(4)</sup>	DC <sup>(5)</sup>
<b>Spectrum Analyzer</b>					
Measure frequency and amplitude from 1 Hz to 4.4 GHz	X				
Measure CW signals as low as -150 dBm	X				
Measure channel power, ACP, and harmonics	X				
Measure signals up to +30 dBm or with a DC component	X			X	
Plot "zero span" amplitude or frequency as a function of time	X				
Configurable go/no-go test masks	X				
Plot phase noise of an LC or RC oscillator or VCO	X				
Troubleshoot a circuit to identify bad RF amps or switches	X		X	X	
Measure timebase frequency differences as close as $1 \times 10^{-11}$	X				
Export trace data in CSV format for another application	X				
Demodulate and listen to analog AM, FM, SSB, and CW.	X				
Use the API for custom automation and/or I/Q data streaming	X				
<b>Measuring Receiver</b>					
Measure Peak and RMS AM, and FM deviation	X				
Measure relative amplitudes down to -125 dBm, $\pm 0.25$ dB.	X				
<b>Scalar Network Analysis</b>					
Sweep  S21  insertion loss	X	X			
Sweep  S11  return loss	X	X			X
<b>Vector Network Analysis (single frequency per cal)</b>					
Use a <b>Smith chart</b> for return loss and impedance matching	X	X			X
Measure gain and phase shift through a circuit	X	X	X		
Measure the electrical length of a cable	X	X			

1. "SA" refers to the USB-SA44B spectrum analyzer

2. "TG" refers to the USB-TG44A tracking generator. For VNA functions, you may substitute any phase locked RF synthesizer.

3. "P20" refers to the P-20A RF probe

4. "AK" refers to the USB-SA44-ABA accessory kit

5. "DC" refers to the ZFDC-10-5-S+ directional coupler