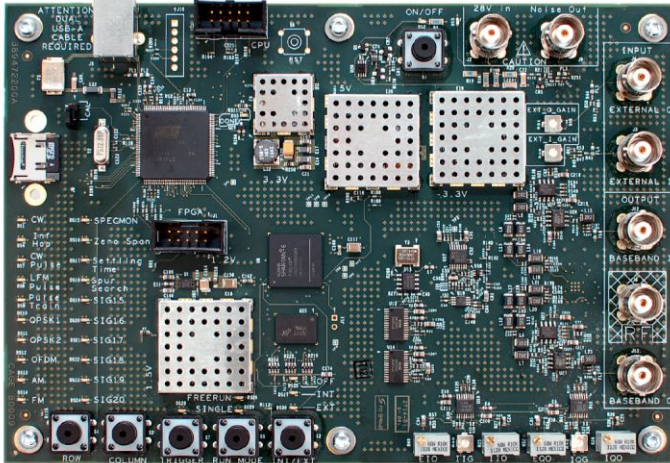


# Demonstration board for spectrum analyzers

## RSA-DKIT demonstration kit for USB spectrum analyzers datasheet

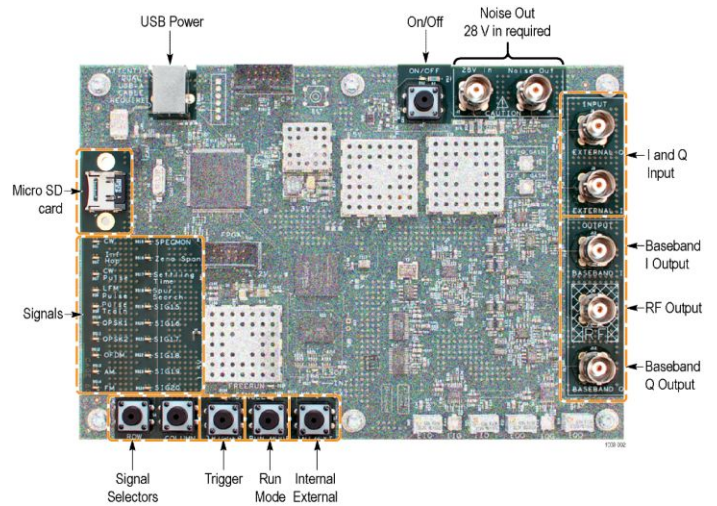


Spectrum analyzers are versatile tools capable of hundreds of different measurements. Creating signals and learning how to get the most out of your analyzer can be a challenging task. The RSA-DKIT gives you the essential tools you need to understand measurement concepts and operating methods for Tektronix spectrum analyzers. With this package you can learn to make basic spectrum measurements, spurious measurements, channel power and ACPR, modulation measurements of various signal types and analog AM/FM measurements. No additional equipment is required, and the kit contains a printed demonstration guide that takes you through measurements.

### Key specifications

- USB 2.0 powered
- 2.45312 GHz output

- 14- preprogrammed signals
- I and Q inputs
- I and Q outputs
- Built-in noise source
- Internal or external trigger
- Printed demonstration guide with 12 labs



The RSA-DKIT produces 16 different signals to help you learn spectrum analysis and the latest measurement methods.

# Specifications

All published performance is typical.

## Controls

<b>ON/OFF</b>	Power switch (LED red when on)
<b>ROW / COLUMN (Signal selectors)</b>	Selects desired signal Signal output at RF Output starts ~2 s after selection, or when Signal LED stops blinking.
<b>INT/EXT - select between</b>	
<b>INT:</b>	Internal signal / modulation (LED on)
<b>EXT:</b>	Use EXTERNAL I/Q modulation inputs (LED on)
<b>OFF:</b>	No output (LED on)
<b>RUN MODE</b>	
<b>FREERUN</b>	Waveforms continuously output (LED on)
<b>SINGLE</b>	Single instance / pulse output (LED on), press TRIGGER to generate When in SINGLE mode, the TRIGGER LED blinks at about a 1 Hz rate to indicate it's waiting for a trigger event.

## Inputs and outputs

<b>USB</b>	Two USB 1.0/2.x ports for power, 800 mA minimum
<b>External I and Q inputs</b>	DC - 5 MHz, 50 $\Omega$ inputs, 1 V <sub>p-p</sub> (+4 dBm) maximum
<b>Baseband I and Q outputs</b>	DC - 5 MHz, 50 $\Omega$ , $\pm 100$ mV into 50 $\Omega$
<b>RF output</b>	50 $\Omega$ BNC-f
<b>Noise source bias input</b>	0 V (disable) or +28 V (enable), 17 mA nominal
<b>Noise Out</b>	Produces ~20 dB excess noise from 10 MHz to 3 GHz when powered by an external +28 V

## Internal signals

<b>Continuous</b>	2445.312 MHz sine wave output, -5 dBm
<b>Infrequent hop</b>	- 5 dBm CW signal centered at 2445.312 MHz. Every 1.28 seconds, the frequency will hop to 2458.2 MHz for approximately 155 $\mu$ s.
<b>CW pulse</b>	Pulsed CW signal, centered at 2445.312 MHz. PRI is 100 $\mu$ s - Pulse ON duration is 10 $\mu$ s, OFF duration is 90 $\mu$ s.
<b>Linear FM pulse</b>	
<b>Carrier wave:</b>	2445.312 MHz.
<b>Linear chirp:</b>	10 MHz sweep
<b>PRI:</b>	250 $\mu$ s
<b>Pulse on width:</b>	25 $\mu$ s, duty cycle is 10%
<b>Pulse off width:</b>	225 $\mu$ s

**Internal signals**

<b>Pulse ON power:</b>	-5 dBm
<b>On/OFF ratio:</b>	> 40 dB
<b>Frequency deviation:</b>	±5 MHz about 2445.312 MHz
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<b>Pulse train</b>	Two 100-pulse patterns separated by 5 ms and repeated once every second. Each pulse train consists of 100 CW pulses with a full amplitude I DAC output.
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<b>QPSK 1</b>	
<b>Carrier Wave:</b>	2445.312 MHz
<b>Symbol rate:</b>	3.072 MS/sec
<b>Pattern:</b>	PRBS9
<b>Filter:</b>	RRC, alpha=0.33
<b>EVM:</b>	< 5%
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<b>QPSK2</b>	
<b>Carrier Wave:</b>	2445.312 MHz
<b>Symbol rate:</b>	3.84 MS/sec
<b>Pattern:</b>	PRBS11
<b>Filter:</b>	RRC, alpha=0.22
<b>EVM:</b>	< 5%
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<b>OFDM (802.11p)</b>	802.11p standard 10 MHz wide OFDM packet that repeats every 2 ms. Carrier Wave: 2445.312 MHz, OFDM EVM, RMS all: ≤23 dB
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<b>AM</b>	
<b>Carrier Wave:</b>	2445.312 MHz
<b>Modulation rate:</b>	1.00 kHz
<b>Depth-of-modulation:</b>	50 %
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<b>FM</b>	
<b>Carrier Wave:</b>	2445.312 MHz
<b>Modulation rate:</b>	1.00 kHz
<b>Deviation:</b>	100 kHz
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<b>SPECMON</b>	Continuous 10 MHz LFM pulse superimposed with a FM signal -40 dB down.
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<b>Settling time</b>	This signal is the same as Infrequent Hop (Waveform 2) signal described above.
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<b>Spur search</b>	Two-tone waveform with tones at +1 MHz and +4 MHz relative to the center frequency of 2445.312 MHz. 4 MHz tone is -50 dB down relative to 1 MHz tone.
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<b>Waveform 15 (P25 C4FM)</b>	P25 standard continuous C4FM signal with a bandwidth of 12.5 kHz.
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<b>Waveform 16 (P25 HCPM)</b>	P25 standard continuous HCPM (Inbound) signal with a bandwidth of 12.5 kHz. Symbol rate is 4800 Symbols/sec. Modulation fidelity for P25 HPCM ~24%.
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## Ordering information

### RSA-DKIT

Includes: Demo board version 3, carrying case, N(m)-BNC(f) adapter, whip antenna, and demo guide (printed).

Item	Description
RSA-DKIT	Version 3 demonstration board

### Warranty

90 days parts.

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\* European toll-free number. If not accessible, call: +41 52 675 3777

**For Further Information.** Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit [www.tek.com](http://www.tek.com).

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