

Wavelex Products Facilitate Both Multi-Octave Bench Testing and Multi-System Testing

ABSTRACT

This paper addresses the use of Wavelex wideband products in test setups for multi-octave and multi-system testing, as well as the advantages of using these wideband products for the testing of narrowband systems. Specific products are presented, along with an example test setup that allows for multi-system testing of ISM 868 MHz, ISM 915 MHz, and avionics transponders at 978 MHz, 1030 MHz, and 1090 MHz, without the need to change components.

INTRODUCTION

Wavelex offers a full portfolio of RF, IF and microwave signal processing components for the RF and microwave industry, including amplifiers, attenuators, bias-Ts, couplers, DC blocks, SMA connectors and cables, splitters and combiners, switches, and terminators and loads. Wavelex devices are suitable for test and measurement, wireless infrastructure, medical, and military applications, and the devices facilitate both multi-octave bench testing and multi-system testing.

WIDEBAND COMPONENTS FOR MULTI-OCTAVE TESTING OF WIDEBAND MILITARY AND FIBER OPTIC SYSTEMS

Today's demands for ever-increasing functionality and small form factors make fully-equipped test and measurement setups crucial to product development, from concept and design through final testing stages. Creating signals and capturing responses from devices under test (DUTs) is

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essential to prove or correct the operation of RF systems.

Wideband military and fiber optic systems present specific multi-octave bench testing challenges that require wideband devices that can tolerate the stringent operating conditions associated with military (i.e., jammers, electronic warfare), fiber optic and other applications that require high frequency, multi-octave power performance.

Most test benches include standard components that cover the frequency range that is typically used. Wavelex offers a number of wideband components that are ideally-suited for this kind of multi-octave testing, including:

The [WSW10180A](#) 1W SPDT switch offers wide frequency band operation, from 1.0 to 20.0 GHz, with a low insertion loss of 1.5 dB, power handling of +30 dBm, and 50 nS switching speed.

The [WBT000200A](#) Bias-T offers wide frequency band operation, from 20 MHz to 20 GHz, with a low insertion loss of 0.5 dB and 220 mA DC current handling.

The [WDCB00250A](#) DC block operates from 10 MHz to 25 GHz and offers a low typical insertion loss of 0.50 dB. The device also features 1.25:1 VSWR, 16V DC voltage handling, and 2W continuous wave (CW) power handling.

Other wideband Wavelex devices include a [DC to 18 GHz coaxial cable assembly](#), a [DC to 27 GHz flange-mount super SMA connector](#), and a [DC to 13 GHz 20W load](#).

On a related note, including these wideband components in a test system also offers flexibility advantages for the testing of narrowband systems by greatly reducing the need to swap-out parts.

VERSATILE DEVICES FOR MULTI-SYSTEM TESTING

Wavelex also offers a selection of devices that cover 868 MHz, 915 MHz (i.e., two of the major ISM bands), as well as 960 to 1215 MHz for avionic transponders and data links. The frequency ranges of the devices make them ideal for multi-system testing. An example bench test setup using these products could include:

- [WSW0127A](#) 0.1 to 2.7 GHz, 10W SPDT switch
- [WPA0214A](#) 175 to 1400 MHz, 0.8W power amplifier
- [WLA0813A](#) and [WLA0527A](#) 0.8 to 1.3 GHz and 0.5 to 2.7 GHz low noise amplifiers
- [WAT06E](#) DC to 6 GHz, 20W up to 30 dB precision attenuator
- [WBT0030A](#) 10 MHz to 3 GHz high power, high 3A current bias-T
- [WHC0727A](#) 0.7 to 2.7 GHz, 90-degree, 10W continuous wave hybrid coupler
- [WDCB0040A](#) 10 MHz to 4 GHz, 20W DC block
- [WPD0727A](#) 0.7 to 2.7 GHz, 2-way, 0-degree power divider/combiner
- [WLD0060A1](#) DC to 13 GHz 20W load

This setup would allow for multi-system testing of ISM 868 MHz, ISM 915 MHz, and avionics transponders at 978 MHz, 1030 MHz, and 1090 MHz without the need to change components. Additionally, L- and S-band applications could be tested with only the change of the amplifiers required, because the non-amplifier products listed cover up to 2.7 GHz at a minimum, and most cover 3 GHz or higher.

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WAVELEX PRODUCTS

All of the devices mentioned in this article are packed with precision machine housings in [Wavelex packages](#). Wavelex products are 100% production-tested on all minimum and maximum electrical specifications.

Wavelex, powered by WanTcom technology, provides RF, IF and microwave signal processing components for the RF and Microwave industry. By leveraging its core competencies in manufacturing GaAs, passive, silicon and other technologies, as well as its 15-year WanTcom history, Wavelex is able to supply high quality products for test and measurement, wireless infrastructure, medical, and military applications. Wavelex products are distributed worldwide exclusively by Richardson RFPD. More information is available online at www.wavelex.com.

SUMMARY

In summary, a test bench setup composed of standard Wavelex wideband components facilitates both multi-octave testing of wideband military and fiber optic systems, and multi-system testing of major ISM bands, avionics transponders and data links. Creating a setup of these wideband products creates flexibility for testing different types of DUTs and systems by minimizing—or even eliminating completely—the need to change components.

Richardson RFPD is a global leader in the RF and wireless communications, power conversion and renewable energy markets. It brings relationships with many of the industry's top radio frequency and power component suppliers. Whether it's designing components or engineering complete solutions, Richardson RFPD's worldwide design centers and technical sales team provide comprehensive support for customers' go-to-market strategy, from prototype to production.

More information is available online at www.richardsonrfpd.com.

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