

PowerMatch

TERASYS
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MAKE YOURSELF HEARD™

The RF Filter for Real World Applications

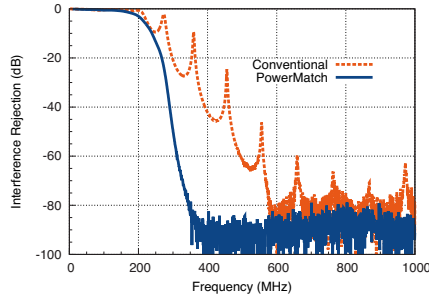


Fig. 1 : Interference rejection under real-world impedances.

When tested with laboratory test equipment, conventional RF filters are capable of achieving good interference rejection. But what happens when these filters are installed into real-world systems? Figure 1 shows empirical data demonstrating that conventional reflective filters can lose up to 30% of their interference rejection with impedance terminations common in the real world. This is partially due to inevitable port impedance mismatches across frequency. Our patented PowerMatch absorptive filter does not rely on port impedance matching and achieves its designed maximum interference rejection under all load conditions.

There are a number of wireless application requiring RF filters to enable operation in the presence of interference:

1. Military Radio Co-Site Interference

A transmitter can interfere with a receiver if operated in close proximity, a problem know as co-site interference. Operating 4 VHF SINCGARS radios in close proximity reduces the communications range from 30 km to less than 3 km¹.

2. First Responders and Public Safety Radio Interoperability

In the United States, many regions where Public Safety radios are installed are subjected to interference by other wireless sources, creating potential communication “dead zones” as large as 0.5 miles in diameter.^{2,3}

3. Commerical Wireless Quality of Service

There is a significant amount of unmanaged wireless “noise” radiated into open air despite emissions regulations established by the Federal Communications Commission (FCC). A survey performed by Cisco indicates that 54% of companies surveyed cite interference as the main cause of their wireless system failures, even more significant considering 78% of them consider their systems to be mission-critical.⁴

Figure 2 illustrates the communications range of a radio in the presence of an interferer. With a filter that only achieves 70% rejection, communication range is 1 mile. Compare that to a 100% rejection filter, such as the PowerMatch, where the communication range extends to 7 miles. In a time of rapid growth in wireless systems and increasing spectrum scarcity, technology to eliminate interference must be capable of maximum performance under real-world conditions. Choose PowerMatch for your filtering needs so you can sleep soundly knowing your filter is providing maximum interference rejection for your real-world applications. If you want to know more about the technology behind PowerMatch and what it can do for you, please contact us at sales@terasys technologies.com to request a copy of our PowerMatch Technical White Paper.

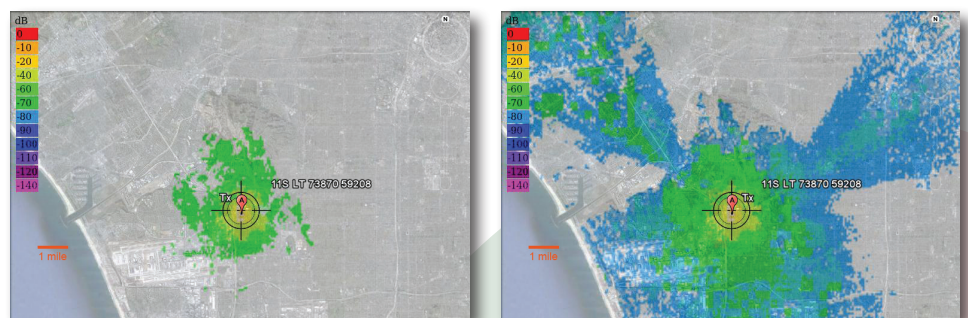


Fig. 2 : 3G communications radio range map with satellite radio interference (left) 70% interference rejection (right) 100% interference rejection

References

1. “SINCGARS frequency hopping multiplexer,” Tactical Communication Conference, 1992, Vol. 1, Fort Wayne, IN, pp. 125-131.
2. Association of Public Safety Communication Officials (APCO) Project 39.
3. Schoenberger, David. www.davidschoenberger.net
4. “Wireless RF Interference Customer Survey Results,” Cisco White Paper, 2010.