# Spectrum Analysis and Monitoring

TX RX Systems Inc – Field Services

## DO YOU KNOW WHO YOUR RF NEIGHBORS ARE?

**Spectrum management has proven to be the key in the design of effective wireless communications systems as optimum frequencies plans are not always possible.**

The effective design of advanced communications systems requires a keen awareness of spectrum usage. Spectrum Analysis and Monitoring (SAM) was developed to permit the engineer to obtain the level of information required in today's RF environment. SAM collects data that provides a clear picture of the RF spectrum seen by the receiver on any frequency within the monitored bandwidth over a 24-hour period.

Information gained through the evaluation of the collected data by knowledgeable RF engineers allows a closer examination of potential interference. It can identify situations that will impede coverage and operation, as well as pinpoint available frequencies that might be otherwise overlooked. Spectrum Analysis and Monitoring is very useful in Pre-Sale applications to facilitate the selection of frequencies, design of receiver networks and expected system coverage. In addition to providing a better understanding of the risks of interference to a new or proposed system, it can also be a significant tool for interference mitigation or any other type of spectrum investigation. Spectrum Analysis and Monitoring is a process that provides the powerful tools needed to find appropriate solutions to today's problems.

## WHY IS SPECTRUM ANALYSIS AND MONITORING SO VALUABLE TO YOU?

**RISK REDUCTION** A pre-design investigation analyzes the impact of interference on an RF hardware design and identifies possible incompatibilities that may exist. In a shifting environment, system design should include a reasonable margin for maintaining "satisfactory" performance in the face of anticipated interference and system degradation over time.

**IDENTIFICATION OF RADIO FREQUENCY HARDWARE DESIGN ISSUES** Identify RF hardware design issues caused by high-level carriers above -40 dBm, as well as occupied frequencies in close proximity to allow the effective design of receive preselectors and transmitter combiners.

**INTERFERENCE MITIGATION** Identify sources of interference to assist in resolution.

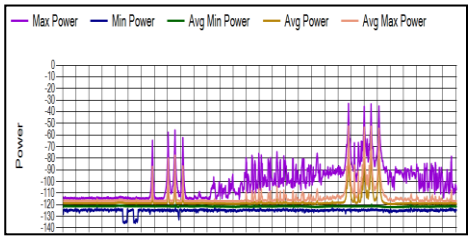
**FREQUENCY RE-FARMING** Enable valid assessment of both licensed and unlicensed compatible frequencies for use in frequency planning by evaluating actual spectrum data.

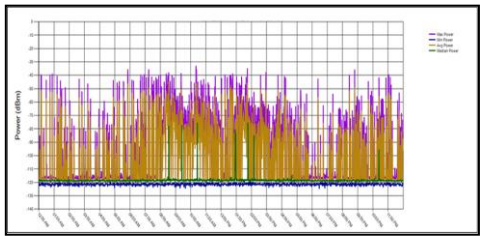
**LOCATE AVAILABLE CHANNELS THROUGH FREQUENCY MINING** Identify usable unlicensed and inactive frequencies actual spectrum information and FCC data.



TX RX SYSTEMS INC. 8625 INDUSTRIAL PARKWAY, ANGOLA, NY 14006-9696
TELEPHONE 716-549-4700 • EMAIL: FIELDSERVICES@TXRX.COM

# Proactively Control the Risk of RF Interference



**RAPID, RELIABLE AND COST-EFFECTIVE SPECTRUM MEASUREMENT** Spectrum Analysis and Monitoring arms you with the invaluable information you need in as little as 24 hours. The appropriate management of spectrum, a crucial resource, cannot be stressed enough. We have gained practical experience in understanding the value and optimal use of RF spectrum as demand continually increases. Today, we extend to you an opportunity to ensure a reliable network and continual growth when it matters most.

## HOW DOES IT WORK?

• **STEP 1 – DATA COLLECTION** A technician is deployed to examine the spectrum during peak utilization periods. By monitoring over a 24-hour period at a site or location, using a computer running Windows-based spectrum monitoring software, a comprehensive analysis of the local spectrum usage is taken - hence the origin of the name “Spectrum Analysis and Monitoring”.

• **STEP 2 - ANALYZE DATA & GENERATE REPORTS** Analysis and Report Generation, including four types of reports: 1) Spectrum Report, 2) Frequency Report(s), 3) High Level Carrier Report by frequency, and 4) RF Hardware Impact Analysis Report. Professional reports (hardcopy and/or softcopy) are produced and reviewed by knowledgeable RF engineers for all identified customer frequencies.

**Spectrum Reports** These reports display the spectrum activity over the specified frequency span and the frequency utilization (occupancy) the 24-hour test period.

**Frequency Reports** These reports detail the activity on each customer frequency for the 24 hour monitoring period. Frequencies that have significant co-channel activity can be easily identified and may warrant a “further investigation” recommendation prior to utilization as system frequencies.

**High-Level Carrier Reports by Frequency** These reports detail frequencies where signals exceed certain thresholds of signal level and occupancy. Signals are evaluated that exceed -40 dBm. This information is highly valuable in the design of the system receive network.

**RF Hardware Impact Analysis Reports Data** is provided on such topics as transmit to receive separation that can be valuable in the design and optimization of the system. This information is also useful in mitigating any problems that are discovered during the optimization and post installation periods.



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