



DEPLOYMENT STORY

MANAGING SPECTRUM AT THE WORLD EXPO IN DUBAI

How the TDRA ensured seamless communication with an RF network that endured temperatures above 45°C



Domain:
Land



Application:
Spectrum monitoring



Customer:
Regulator

PROBLEM – MANAGING SPECTRUM FOR 192 COUNTRIES

The Telecommunications and Digital Government Regulatory Authority (TDRA) regulates the telecommunications sector in the United Arab Emirates (UAE). It plays a vital role in spectrum monitoring and maintaining a reliable, interference-free telecommunications environment.

For 182 days, between October 2021 and March 2022, Dubai hosted the World Expo, bringing together people from 192 countries. The exhibition was held in a 438-hectare area containing three large districts centered around Al Wasl Plaza. The site had an emergency services area, including an emergency room and spaces for ambulances and helicopters.

However, Covid-19 was not the only dilemma for TDRA; it also had many serious spectrum monitoring challenges—managing frequency allocations, geolocating interference, and guaranteeing safe operations. TDRA needed a trusted partner to provide a network of ultra-sensitive RF receivers that would work continuously and unimpeded when left in the blistering Emirati sun.



CRITICAL SPECTRUM TASKS AT LARGE EVENTS

- Ensuring seamless communication
- Coordinating with international participants
- Ensuring uninterrupted media broadcasting
- Managing a high-density Wi-Fi environment
- Monitoring for unauthorized use
- Coordinating emergency services communication
- Ensuring all parties adhere to local spectrum regulations
- Creating backup plans to address unforeseen interference

SOLUTION – A COMPLETE SOLUTION FOR REMOTE SPECTRUM MONITORING

TDRA needed a turnkey solution: six RF receivers housed in rugged enclosures, ensuring the hardware would work continuously in harsh environments. This protection was essential as the receivers would be located on tripods on exposed rooftops around the exhibition.

To ensure the assets could cover all frequencies from 10 MHz–18 GHz with excellent sensitivity and a very high probability of signal intercept, the agency chose the RFeye Node 100-18 housed in outdoor system kits.

As the network was a temporary installment, 4G modems were used for the backhaul—sending RF data to two remote monitoring stations in Dubai and Abu Dhabi. This was possible as most of the signal processing took place on the Nodes, meaning data backhaul requirements are low.

The remote stations monitored spectrum at the World Expo 24/7 using RFeye Mission Manager, allowing TDRA to automate all routine spectrum allocation and monitoring tasks. This freed up the agency's operators to focus on any issues. They used RFeye Site software for real-time monitoring and Time Difference of Arrival (TDoA) to geolocate the source of any interfering or unapproved transmissions. CRFS provided extensive training on these two software programs, ensuring TDRA could confidently start operations quickly.

TDRA's real-time capability allowed the agency to monitor spectrum and respond proactively—if necessary, deploying engineers to actively hunt interference with the three RFeye Stormcases the agency also purchased.

RESULT – A VERSATILE NETWORK THAT WITHSTOOD THE HEAT OF THE DESERT

CRFS installed the network of RF receivers in the summer when temperatures were pushing 45°C. During the thirteen-month deployment the RFeye hardware continued to function seamlessly, even when the temperature inside the RFeye Nodes reached 70°C.

TDRA was delighted with the resilience of its system, which reliably operated in one of the hottest areas on the planet. The Node network continued to work 24/7 without a single issue.

During the exhibition, the authority experienced several interference issues. However, by proactively monitoring the spectrum in real-time, it immediately mobilized engineers equipped with the portable, rugged RFeye Stormcase to carry out closer investigation of unauthorized signals and rapid deconfliction.

Also, despite the World Expo area being the central focus, thanks to the RFeye Nodes' high sensitivity, wide frequency range, and excellent dynamic range, TDRA was able to detect interference from emitters located outside the UAE—allowing the agency to gain insights into the broader electromagnetic spectrum.

Although World Expo Dubai only lasted six months, the six RFeye Nodes became a permanent fixture in the UAE. The network's capabilities superseded TDRA's expectations, so the system was split—three RFeye Nodes were sent to Dubai for fixed installation, and the other three went to Abu Dhabi. Each emirate continues to carry out TDoA and interference work, ensuring any interference is swiftly addressed.

“AN IMPORTANT REASON TDRA CHOSE CRFS WAS THE VERSATILITY OF THE RFEYE SYSTEMS AND THEIR ABILITY TO BE QUICKLY RE-DEPLOYED. THIS WILL ENABLE US TO USE THE EQUIPMENT IN OTHER LOCATIONS AND FOR OTHER APPLICATIONS LONG AFTER THE EXPO HAS ENDED.”

Mohammed Al Blooshi,
Spectrum Monitoring Manager at TDRA

EQUIPMENT USED



RFeye® Receiver (Node)

High-performance spectrum sensor (receive / record) to 40GHz



Outdoor system kit

Rugged enclosure for RFeye Nodes working in harsh environments



RFeye® Site

Real-time spectrum monitoring & geolocation toolkit



RFeye® Mission Manager

Automated spectrum monitoring & mission management



Want to talk spectrum operations for large-scale events?

[Talk to us](#)



Deployment arranged by *Kerry Mertz*

CRFS

**EXTRAORDINARY
RF TECHNOLOGY**

CRFS is an RF technology specialist for defense, national security agencies and systems integration partners. We provide advanced capabilities for real-time spectrum monitoring, situational awareness and electronic warfare support to help our customers understand and exploit the electromagnetic environment.



CRFS Inc
Chantilly,
VA, USA
+1 571 321 5470

CRFS Ltd
Cambridge,
United Kingdom
+44 (0) 1223 859 500

CRFS and RFeye are trademarks or registered trademarks of CRFS Limited. Copyright © 2023 CRFS Limited. All rights reserved. No part of this document may be reproduced or distributed in any manner without the prior written consent of CRFS. The information and statements provided in this document are for informational purposes only and are subject to change without notice.



UK Certificate number: F5576625