

# Light/Tactical CEMA – rapid deployment ‘Early-Entry’ RF surveys

At the urgent request of a tropical friendly nation’s overburdened Tactical CEMA Unit, a member of our Ops Team deployed to a location at the nation’s border with a potentially hostile neighboring country to perform an ‘Early-Entry’ RF survey on behalf of the host Unit. The objective of the survey was to improve the host Unit’s understanding of the local RF environment, and to inform their related planning and development of Tactics, Techniques & Procedures.

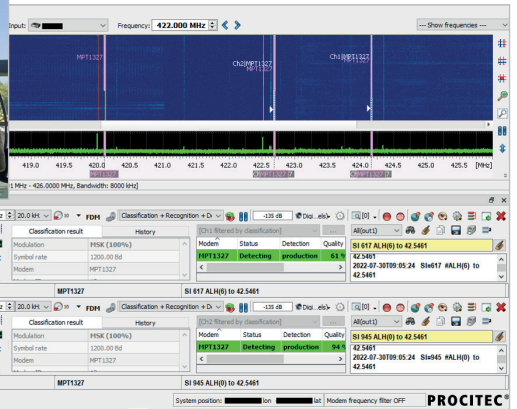
Paramilitary rebel factions across their border were thought to be using Professional Mobile Radios (PMRs) to coordinate their attacks and incursions into the friendly nation, but due to the ongoing heavy workload of the nation’s Tactical CEMA Unit, no signals-exploitation assets were available in-country to deploy to this new Area Of Interest (AOI).

So, our Operator deployed in-country with a wideband receiver, directional and omnidirectional intercept antennas, and a ruggedized mobile workstation PC running our go2signals radio-communications exploitation software suite.

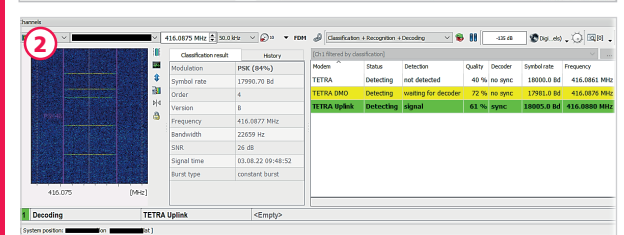
The go2signals-derived Early-Entry survey results confirmed that the hostile rebel factions were indeed using UHF PMRs, specifically the Digital Mobile Radio (DMR) protocol. No DMR trunking networks were noted active; the rebel factions were found to be using their unencrypted DMR Handheld Transceivers (HTs) and Mobile Units (MUs) in simplex Point-to-Multipoint networking. However, cross-border MPT-1327 digital trunking broadcast downlinks were noted active and reported.

Meanwhile, Private Security Contractors (PSCs) were known to be undertaking mobile border-protection patrols for the friendly nation. Our Operator intercepted two such PSCs using unencrypted UHF Yaesu System Fusion Handheld Transceivers (HTs). The SOIs were automatically classified and decoded in real-time; our Operator’s accompanying Interpreter realized that the PSCs were discussing details of their patrol locations, timings and weapons – a clear breach in COMSEC which our Operator immediately reported to the Tactical CEMA Unit for further action and mitigation.

Our Operator had been advised that the friendly nation’s critical-communications trunked network infrastructure had been intentionally but temporarily disabled at their



- 1** go2signals auto-prosecuting a cross-border trunked network (omni-directional V/UHF mag-mount intercept antenna visible)
- 2** go2signals Production Channel reporting TETRA TMO Uplink (vice TETRA DMO Gateway)
- 3** Auto-classified high-amplitude (48 dB) STANAG-4285 Modem ('no fading' - probable ground/surface-wave propagation)



Type	Frequency	Bandwidth	Symbol rate	SNR
FACTOR	6.3304 MHz	2520 Hz		12 dB
STANAG 4285/4481 (PSK)	6.3335 MHz	3200 Hz	2400.0 Bd	48 dB

border to avoid exploitation and active effects being applied by a potential aggressor.

The related portion of the UHF spectrum was indeed ‘quiet’. However, the Operator noted a single, seemingly related emission transmitting apparent data-packets. Observing the emission on the go2signals wideband spectrogram display, the Operator initially believed the SOI to be a Tetra DMO Gateway which, erroneously, had not been deactivated.

However, the Operator ‘dropped’ the SOI from the go2signals wideband spectrogram into an available Production Channel, which, to the Operator’s surprise, automatically classified and recognized the SOI as a Tetra Trunked Mode Operation (TMO) Uplink.

The Operator now realized that the SOI was a ‘lonely’ Tetra TMO Uplink which was sending data-packets to try to register with its ‘parent’ Tetra TMO cell, but could not register because, of course, the ‘parent’ Tetra cell had been intentionally deactivated!

The ‘lonely’ TMO Uplink could be prosecuted and geo-located by a potentially hostile 3rd-party; therefore, the Operator immediately reported these findings to the host Unit. Sometime later, the ‘lonely’ TMO Uplink’s emissions went ‘off-air’...

Even without our military (MIL) modem decoder sub-set the Operator was still able to detect and auto-classify signaling protocols of short-medium range HF military-standard modems in real-time by use of the go2signals automatic signals classification capabilities whilst these emissions’ ground/surface-waves propagated through the canopy layers of the local primary tropical forest.

Welcome to the House of Signals

**PROCITEC®**  
 PROCITEC GmbH  
 sales@procitec.com  
 www.procitec.com