

Lessons Learned From Hezbollah Attack on the INS Hanit

To Detect Threats from Sea-Skimming Missiles, Ships Need Modern Radar Systems with Very Low Phase Noise TWT Amplifiers



The Middle East erupted into violence on July 12, 2006 after Hezbollah guerrillas crossed the Israel-Lebanon border and captured two Israeli soldiers. What followed was 33 days of intense fighting between Hezbollah and Israel.

Late in the evening on Friday, July 14, Hezbollah fired two Iranian-made C-802 anti-ship missiles (a variant of the Chinese Silkworm missile) toward the Israel Navy Ship (INS) Hanit. This Saar 5-class Corvette, carrying several dozen sailors, was patrolling the Lebanese coast 16 kilometers from shore.

Hezbollah launched a simultaneous “high/low” attack from Lebanon. The first “high” missile passed over the Corvette, hitting and sinking an Egyptian merchant ship. The second “low” missile was a direct hit to the warship’s helicopter deck. Four Israeli soldiers were killed as the ship caught fire. In addition, the INS Hanit’s propulsion systems inside the hull were crippled. ¹

Modern Radar Systems Save Lives, Protect Military Equipment

In retrospect, the clash between the two forces offers a valuable lesson: Threats from sea-skimming missiles are real and must be avoided. Fortunately, radar systems do exist today that can provide early and reliable horizon surveillance, including detection of sea-skimming missiles at an ultra-low false alarm rate.

To distinguish a moving target from strongly reflected sea clutter, it is essential that the radar system’s traveling wave tube

amplifier (TWTA) provide very low phase noise. The dB Control dB-3273 TWTA not only provides extremely low phase noise, but also has excellent amplitude and phase stability.

“Our amplifiers have been integrated into several platforms where they’ve demonstrated some of the lowest phase noise in the industry,” said Joe Hajduk, CEO of dB Control. “And as for reliability, many of our systems in the field have been operating continuously since they were installed over a decade ago.”

Based in Fremont, California, dB Control has been designing and manufacturing high-power amplifiers for nearly two decades. The dB Control dB-3273 TWTA is specifically designed for extremely low phase noise radar transmitter applications, as its power supply switching frequency is synchronized with a radar system clock. In addition, the conduction-cooled dB-3273 TWTA was developed using much of the same circuitry that operates in harsh environments, such as high shock, vibration and extreme thermal conditions.

The dB-3273 TWTA operates in the X-Band radar frequency range (phase noise better than -125 dBc/Hz) and provides eight kilowatts of peak power at a maximum duty cycle of five percent. An additional feature is the capability to be power combined to double or quadruple the power out. For shipboard radar applications, this TWT amplifier is highly effective and offers reliability unmatched in the industry.



dB-3273 TWT Amplifier

Manufactured and Designed in the U.S.A.

The dB-3273 TWTA is a modular package supplied as two assemblies – a high-voltage power supply (HVPS) and a TWT amplifier. As a result, it can be easily integrated into an existing radar transmitter package.

A radar system with a TWT amplifier providing very low phase noise can save lives, as well as protect ships worth millions of dollars. Plus, the dB-3273 TWTA is made in the United States, enabling our domestic industry to retain the critical skills and technology needed to protect our fleets now – and in the future.

dB Control 

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1. As reported by Fox News
<http://www.foxnews.com/story/0,2933,203754,00.html>

Photo of the INS Hanit courtesy of the Israeli Defense Forces.