

Low Band Transmitter (LBT)

The Low Band Transmitter (LBT) is part of the U.S. Navy EA-6B Prowler aircraft AN/ALQ-99 Tactical Jamming System (TJS) and is designed to provide low frequency radar and communication jamming capability to the Prowler's Airborne Electronic Attack (AEA) mission. The LBT is intended to replace the existing Band 1, Band 2, and Interim Band 2/3 transmitters on the current EA-6B aircraft. It will also be used in conjunction with the Communications Countermeasure Set (CCS) to replace the legacy USQ-113 communications jammer on the EA-6B replacement aircraft, the EA-18G.

The LBT is housed in a jamming pod carried under the wing of an AEA aircraft. The jamming pod consists of a legacy hardback structure that mounts the pod to the aircraft; a Universal Exciter Unit, consisting of two transmitters of which the LBT could be one or both; and the radome of the current TJS used on AEA aircraft.

Adequacy

Testing was done in accordance with a DOT&E-approved Test and Evaluation Master Plan and approved deviations to the Test Plan. Testing was adequate to evaluate the jamming effectiveness of LBT against communications targets and to evaluate LBT operational suitability.

Testing was not adequate to fully evaluate jamming effectiveness of LBT against early warning radar threats. Limiting factors during testing included the following:

- Testers did not operate the EA-6B in an operationally-representative environment. Testing at realistic ranges against threat radars was limited by geographical boundaries.
- The LBT jamming assignments were not operationally representative.
- Threat system electronic protection circuitry commonly found on real-world systems was not utilized during all Initial Operational Test and Evaluation (IOT&E) events.
- Limited data were collected against threat systems, impacting the ability to assess LBT performance against threat early warning radars.

Operational Effectiveness

LBT is operationally effective against communications targets. Data for fully assessing LBT operational effectiveness against threat representative early warning radars were not adequate, as the Navy conducted testing under a very narrowly defined set of operating conditions. Thus, a complete effectiveness rating is not possible. Further LBT testing should be conducted against early warning threat radars.

LBT demonstrated compliance with the Measures of Effectiveness (MOE) performance thresholds listed for the system in the Operational Requirements Letter (ORL). These thresholds included effective radiated power levels, antenna azimuth, and elevation spatial coverage.

Operational Suitability

The LBT system is operationally suitable. Although the LBT system did experience multiple hardware failures during the first two operational assessments, system reliability was not a factor during the IOT&E and observed operational performance in Iraq. Data collected during an early operational release of this system indicates that LBT reliability is improving and will provide a more reliable asset to the Navy than the legacy transmitters this system is designed to replace.

Recommendations

In order to fully assess LBT effectiveness, the Navy should accomplish the following:

- Investigate and invest in early warning radar threats to fully assess LBT capabilities against realistic threats and operationally-representative scenarios.
- Work to ensure that more facilities for testing low frequency systems like the LBT are made available.
- Complete LBT effectiveness testing against early warning radars. Once complete, ensure lessons learned are integrated into the EA-6B Improved Capability III FOT&E and EA-18G developmental and operational testing.
- Continue to track and use LBT suitability metrics using data from deployed squadrons to inform reliability growth programs.

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