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In Telecommunications –

Differential QAM Technology: The High Explosive Radio Telemetry (HERT) system utilizes a NNSA Kansas City Plant-developed technology called the Differential Quadrature Amplitude Modulation (Differential QAM) technique that enables very high speed data collection and transmission. The objective is to capture information about a weapon just nanoseconds before an impact or an explosion. HERT has data transfer rates up to 100 megabit per second, more than 10 times faster than any commercial off the shelf technology in the wireless industry. The HERT telemetry device has been miniaturized and flight tested. Tremendous commercial applications such as aircraft black boxes and automotive impact tests are prime candidates for developing new diagnostic data tools and electronic devices to collect and transmit data quickly before the unit is destroyed in a crash or an explosion.

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2000-02-09 **High Explosive Radio Telemetry** System Bracht, R.R.; Crawford, T.R.; Johnson, R.L.; McLaughlin, B.M. 45 MILITARY TECHNOLOGY, WEAPONRY, AND NATIONAL DEFENSE; Chemical Explosives; Chemical Explosives; Telemetry; Telemetry; Data Transmission Systems; Data Transmission Systems This paper overviews the **High Explosive Radio Telemetry (HERT)** system, under co-development by Los Alamos National Laboratories and Allied Signal Federal Manufacturing & Technologies. This telemetry system is designed to measure the initial performance of an explosive package under flight environment conditions, transmitting data from up to 64 sensors. It features high speed, accurate time resolution (10 ns) and has the ability to complete transmission of data before the system is destroyed by the explosion. In order to affect the resources and performance of a flight delivery vehicle as little as possible, the system is designed such that physical size, power requirements, and antenna demands are as small as possible