

Neology Tolling Transponder Technology

Eric Redman
Director, Sales & Marketing
Neology, Inc.

Introduction to Neology

- Neology is headquartered in San Diego with additional offices and manufacturing in Mexico City.
 - From an early R&D background, the company has focused more recently on vehicle AVI/Tolling.
 - Neology is a pioneer and one of the most experienced companies today in passive RFID technology.
 - Over 30M tags deployed globally.
 - Significant experience with 6C technology on vehicles-supplier of the Mexico Repuve program.

From Active Technology to Passive

- Tolling has traditionally relied on active tags.
- Performance of passive became viable only as recently as 2005-2006 with the first successful 6C products.
- Neology's advanced ISO 18000-6C products allows passive performance meeting the requirements in tolling: High speed (100 MPH+), reliability over 99%.
- In some cases, higher performance at FCC Part 15 than Part 90 power levels.

Is 6C “Low Tech”?

- Yes, 6C came from efforts in supply chain to replace barcodes- and this is a good thing.
- This effort and the “Wal-Mart effect” led to massive investment-one provider alone has received \$340M in funding since 2004.
- The challenge of driving costs low while maximizing performance benefits ALL 6C users.
- As retail volumes have largely faltered, 6C hardware providers have rapidly added other features for new markets.

Is 6C Technology Ready?

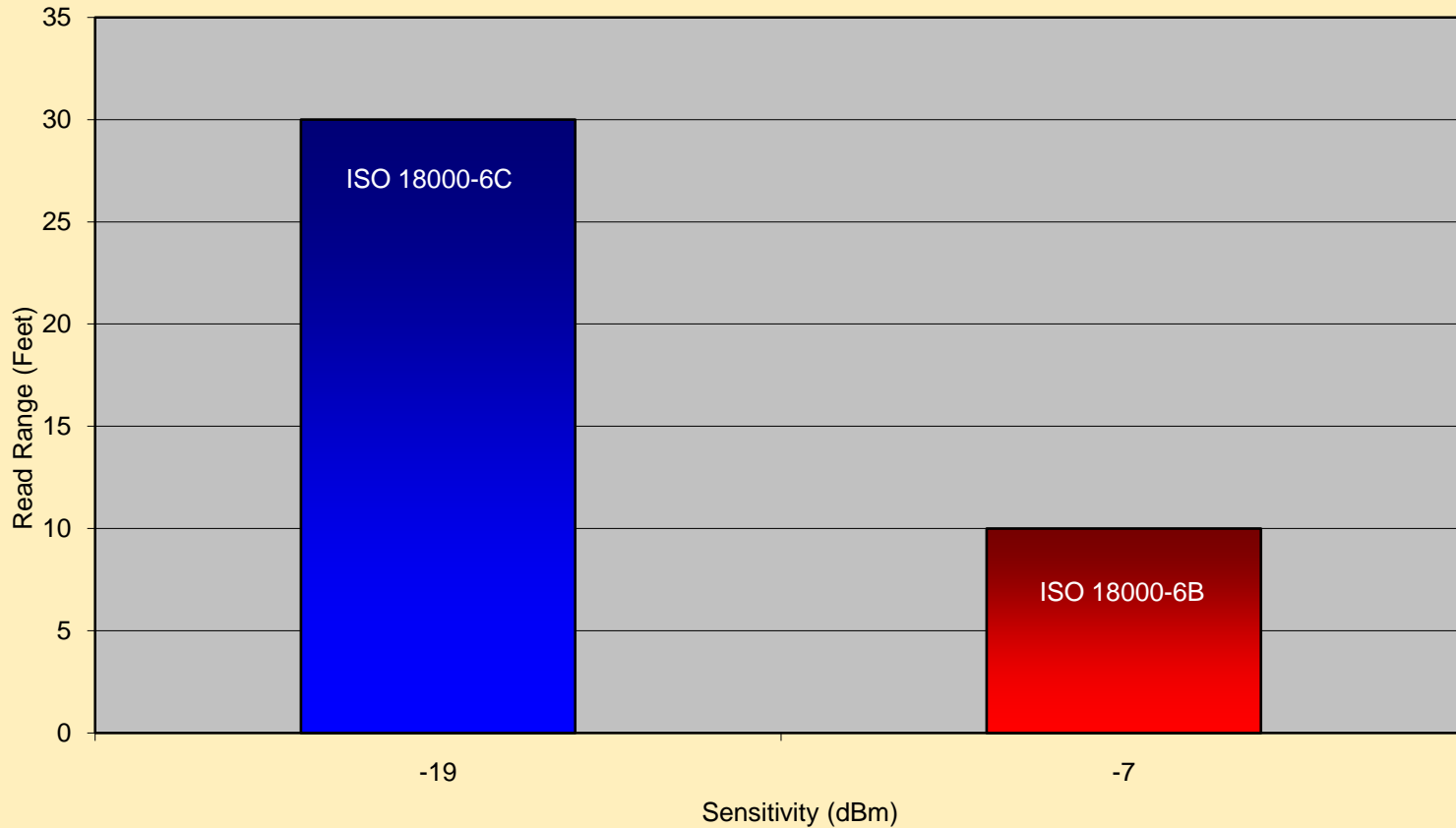
- U.S. Government has already made a massive investment in the 6C platform.
- Every U.S. border crossing is equipped with 6C.
- New PRC “Green Card” has 6C as do other IDs (EDL, etc.)
- Military ramping up with 6C in logistics.
- In tolling/vehicle use, 6C is being rapidly deployed worldwide (Mexico, India, etc.)
- Mexico chose 6C exclusively for all vehicles (approximately 30 million) in that country.

Why Use 6C in Tolling?

- Performance – 6C is the newest platform and offers the highest performance chipsets by far.
- Dominant Standard – 6C platforms allow the largest selection of suppliers for maximum performance at a low cost.
- Security – Unique security features can be implemented while maintaining speed and reliability.
- Flexible Form Factor – The smaller chip sizes and lower cost available with 6C allow a host of form factors such as flexible substrates, ID cards, etc.

Lab Performance Comparison

ISO 18000-6C (EPC Gen2) versus ISO 18000-6B
Sensitivity Comparison



Open Road Performance Comparison

ISO 18000-6B and 18000-6C Tag Speed Comparison			
		Reads – (Handshakes)	
Vehicle	Speed (mph)	ISO-18000-6B	EPC Gen2
Chevy Truck	90	2	17
	60	4	43
	40	6	68
Dodge Charger	90	2	56
	60	3	68
	40	6	91
Nissan Sentra	90	2	20
	60	3	45
	40	4	72

Note: 6C EIRP was set to 41dBm while 6B EIRP was set to 45.5dBm. This was due to 6C transmit power maxing out at 41dBm.

Interoperability Considerations

- As with any technology platform, it makes sense to pick the standard with the largest adoption rate and supplier base.
- 6C has the largest supplier base and is the dominant standard in RFID deployments by far.
- 6C is a standard for precisely what is sought: interoperability.
- Massive investment in the 6C platform has resulted in the highest performance and lowest cost.
- Large (and growing) selection of supporting hardware.

Key Summary Points

- 6C technology has arrived for vehicle use.
- 6C is the dominant standard for the future:
 - Backed by government mandate
 - Superior price/performance metric
 - Largest supplier base
 - Likely platform for EVR and other services
 - Highest level of technology currently available
- Choose a 6C provider that has experience with vehicles:
 - Optimized tag design critical
 - System design and setup important
 - Security considerations