

ROBUST 10-Mbps PHY: INTRODUCTION

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INTRODUCTION

► Technology Development

TOPICS

- Robust 10-Mbps Modulation
- MSK: Low Current Drain for PC Cards
- Need for TRANSEC

Robust 10-Mbps in Multipath

- **Direct-Sequence Spread-Spectrum**
 - Uses 16 Chips/Symbol
 - Provides 12 dB Processing Gain
- **Bi-Orthogonal Modulation**
 - Expand Data Bandwidth to SS Bandwidth
 - Approximately 7 dB E_B/N_0
- **Natural Combination for DSSS**

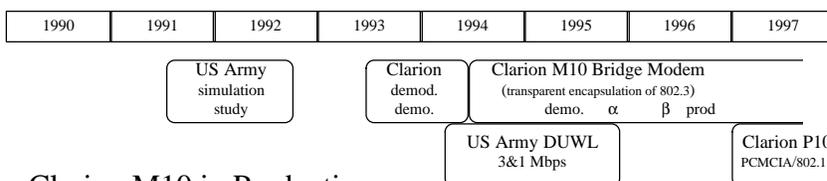
Robustness Features

- **MAC-Level Retransmissions**
 - Low Latency
- **Retransmission Protocol also Controls**
 - Forward Error Correction
 - Antenna Selection Diversity
 - Adaptive P-CSMA
- **PN Codes Optimized for Multipath**

Other Features

- **Rapid Acquisition**
 - Small Preamble Overhead
 - High Data Throughput
 - P-Persistent CSMA Channel Access
- **Transmission Security (TRANSEC)**
 - Symbol-to-Symbol DSSS Code Changing

MICRILOR Development



- **Clarion M10 in Production**
 - Robust 10-Mbps Transmission and DSSS Privacy (TRANSEC)
 - >7.5 Mbps throughput @100m Indoors ($P_T=40$ mW)
 - >6 Mbps throughput @20 mi. (high-gain ant.)
- **Clarion P10 in Development**
 - PC Card . . . Low Current Drain and Small Form-Factor
 - AP10 Access Point with DSSS Authentication and BSS Isolation
 - Conforms to 802.11 MAC

Relationship Between 2- and 10-Mbps Standards?

- System Solution
 - Multiple Access Points
 - Dual-Media Access Point
- Product Solution
 - Dual-Mode Wireless NIC
- Standard Constraint
 - Limit Performance for Backward Compatibility ?
 - What About Future, Higher Data Rates?