MSK CHIP MODULATION

John H. Cafarella
MICRILOR, Inc.
Wakefield, MA

Key Technology for PC Card

- Allows Low-Drive-Level Power Amplifier
  - Spectral Shaping Correct Without Filtering
  - Nearly Constant Time-Domain Envelope
  - Not Sensitive to PA Saturation
- With Currently Available Components
  - e.g., 70 mA Instead of 270 mA PA Supply Current
  - Single Supply Operation (3V Possible)
Other MSK Advantages

- Can Hard Limit on Receive
  - MSK has Nearly Constant Envelope
  - Heavily Filtered PSK has Large AM
- Two 32-Mchip/sec Channels at 2.4 GHz
  - Slight Overlap Before First Null
  - Isolation Under Study
- Supports 1 each 10- and 2-Mbps Channels

MSK Related to O-QPSK

- Requires Chip Shaping
- Difficult for Filter or Generator Alone
- Use Hybrid Generator/Filter
  - Generator Runs at 2f_c
  - Modest Filtering Requirement
- Existing Digital Correlator
  - j^n Implemented in Multiplexer
- Very Low Cost to Implement
MSK Test Board

MSK Test Setup
6 dB Below 1-dB Compression

Right at 1-dB Compression
6 dB Above 1-dB Compression

MSK Time-Domain Waveform
PSK Correlation Spike

MSK Correlation Spike