

# Reed-Solomon Coding for IEEE 802.11

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## FEC for Streams

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- All streams can not be treated in the same way at MAC
- Different streams have different transmission requirements. Eg.,
  - High bandwidth requirement for stream like video prohibit retransmissions.
  - Latency constraints in streams like voice limits the number of retransmissions attempts.
  - Other streams like audio, interactive media have different retransmission requirements
- Error correction significantly improves the data throughput.

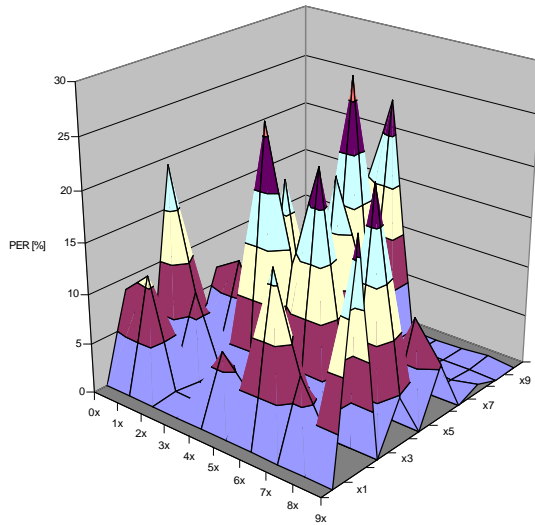
## Feasibility of Reed Soloman Coder

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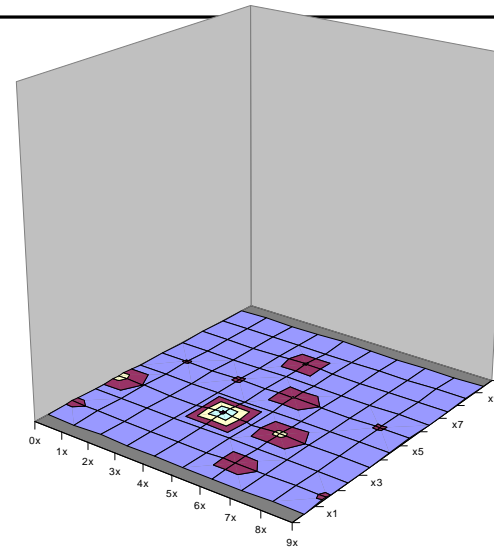
- **Well known technology**
- **Already used by standards**
  - IEEE 802.14/MCNS
  - DVB/DBS
  - Etc...
- **Commercially available**
  - RS (255, 239), tmax=8 cores are under 20K gates

**FEC Field Results**  
Un corrected PER  
242.4 K Packet Cluster

Corrected PER  
242.4 K Packet Cluster



Before FEC



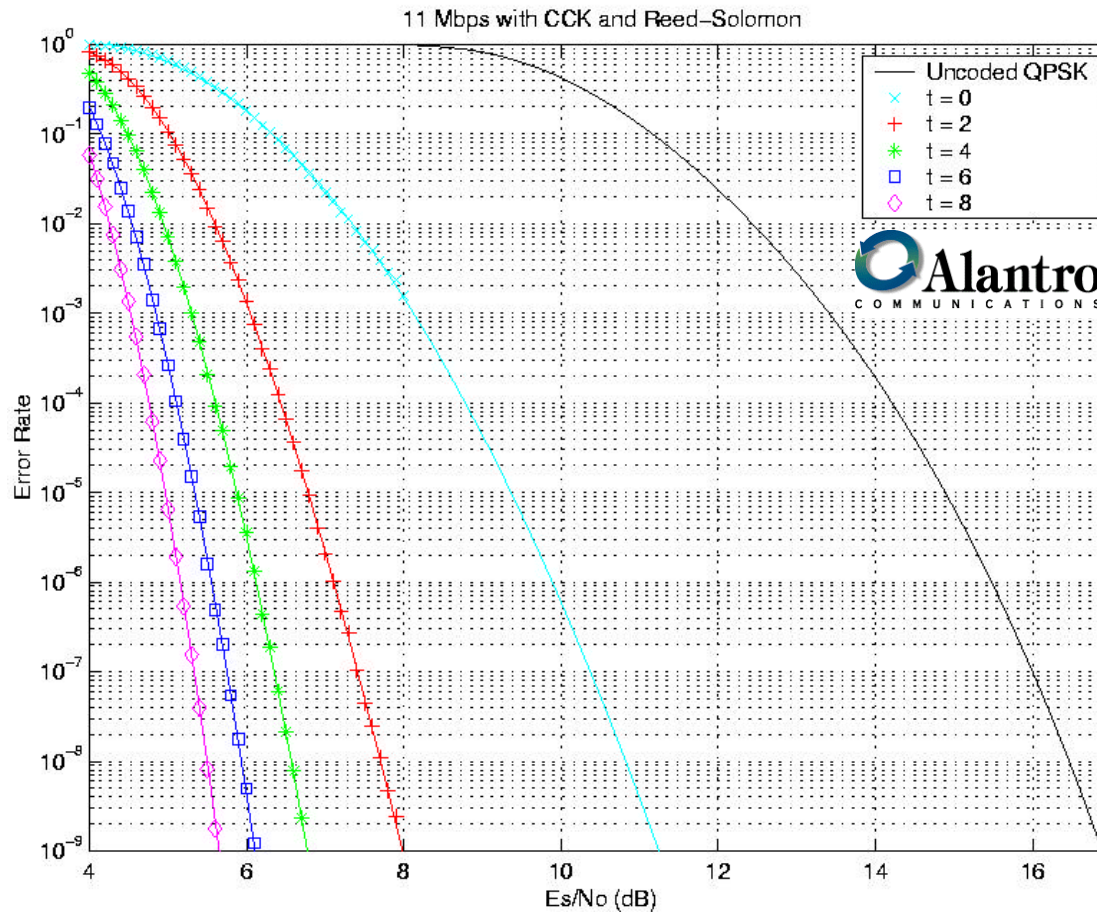
After FEC

\* 4 sq./ft MatrixTest Area  
\* 45ft Transmit Distance

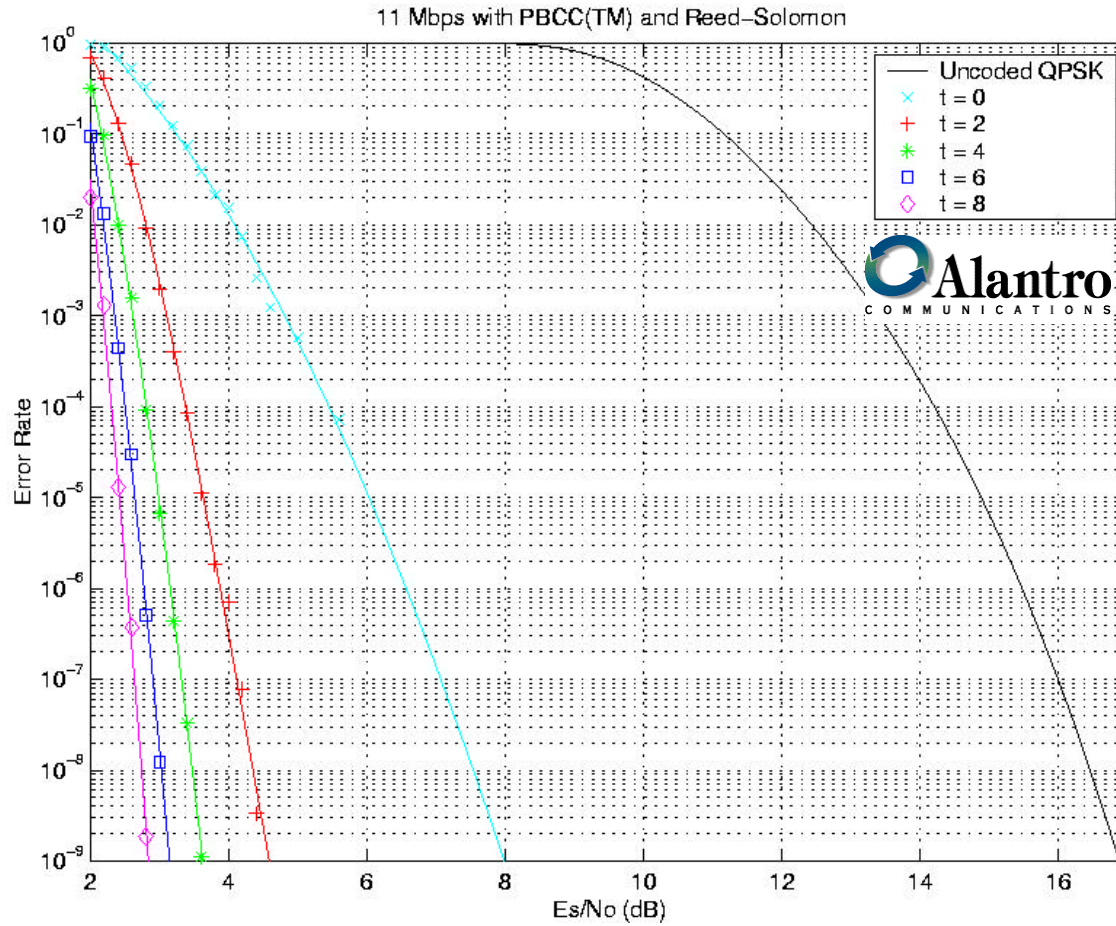
# Parameters of Reed-Solomon Codes for MPEG Video Packets

- GF256 (8 bit byte symbols)
- ( $n \leq 257$ ,  $k = n - 2*t$ ,  $d = 2*t + 1$ )
  - Can correct  $t$  errors
- MPEG-2 Packets,  $k = 188$ ,  $n = 188 + 2*t$

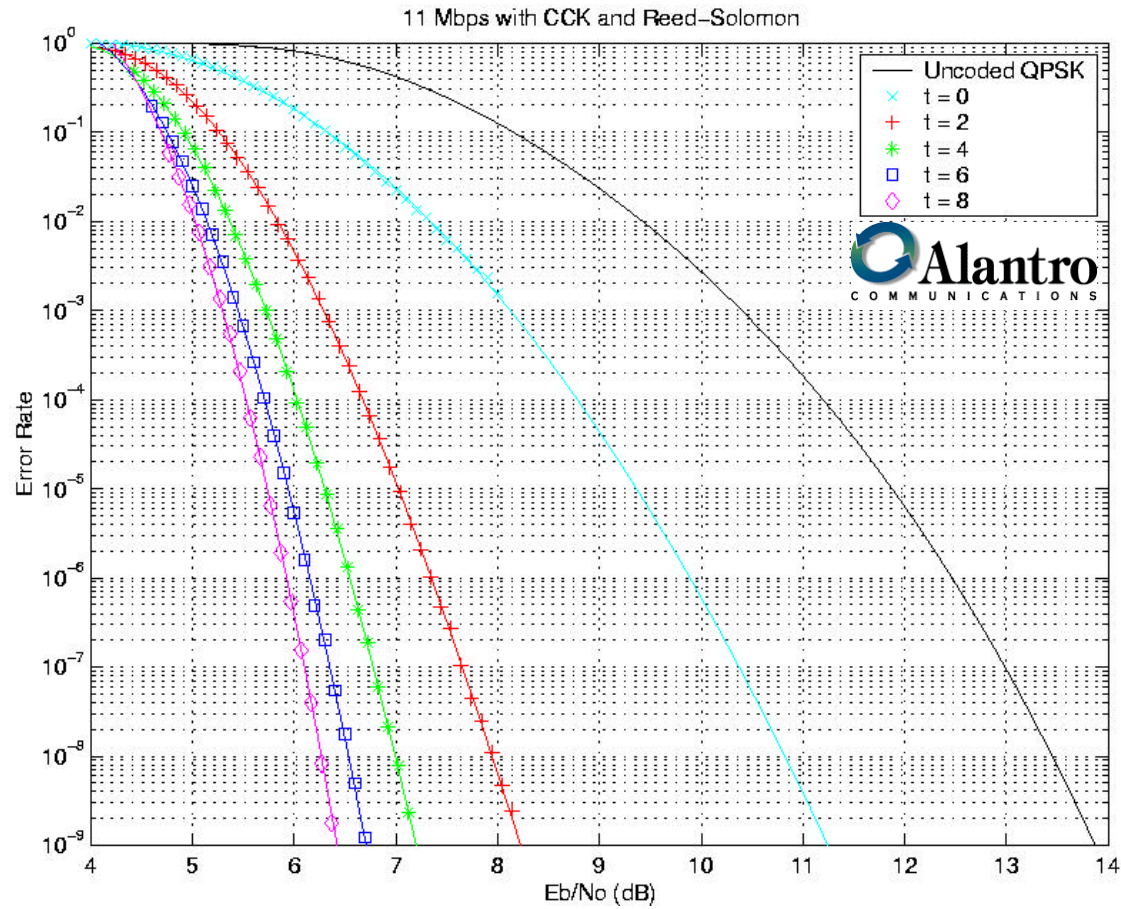
# CCK at 11 Mbps, Es/No



# PBCC at 11 Mbps, Es/No



# CCK at 11 Mbps, Eb/No





# PBCC at 11 Mbps, Eb/No

