Channel Quality Measurements

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Purpose:
Key points to be considered in choosing a channel quality measurement and reporting approach.

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RSSI & BER Measurements

- Walt Roehr
- InterDigital/TNC
Use TIA IS-136 Model

- US TDMA cellular standard
- used in Mobile Assisted HandOff
- Mobile given list of candidates
BER is Fundamental

- If the BER is low enough everything is OK
- Post-FEC BER goes to pot quickly
- Pre-FEC BER can be a less volatile indicator
RSSI tells why BER bad

• High BER and high RSSI indicates interference situation
  – another channel from same base station apt to be good

• High BER and low RSSI indicates too much path loss
  – probably need different base station to improve link
Use Broadcast Portions

- Transmission at Full Power avoids interpretation problems
- Slows readings on additional channels
- ? -- Reason to avoid power adjustment
Leaky Bucket Integration

• Take average over 25 frames

• Add samples by summing $24/25$ of old plus $1/25$ of new

• Reset whenever Base Station issues new command
Reporting & Encoding

- 3 bit BER encoding
- 5 bit RSSI encoding
- Base Station sets reporting schedule
## Encodings

### RSSI -- 2 dB quantization
- 00000 = -120 dBm or less
- 11111 = -56 dBm or higher

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<td>&lt;0.01%</td>
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<tr>
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<td>0.01 to 0.1%</td>
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<tr>
<td>010</td>
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