Channel Quality Measurements

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Purpose:

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

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

Code	**BER-avg**
000	<0.01%
001	0.01 to 0.1%
010	0.1 to 0.5%
011	0.5 to 1.0%
100	1.0 to 2.0%
101	2.0 to 4.0%
110	4.0 to 8.0%
111	>8.0%