

8.6.5 Success rate

The power control loop terminates when every BS broadcast power converges and traffic channel power level for every user is calculated. Therefore, both the BS output power and the success rate for the cell of interest (center cell in Figure 198) can be calculated. BS output power is the sum of the power in pilot, overhead and all traffic channels. Success rate is the percentage of calls that do not suffer quality degradation. The following process can be used to calculate both output metrics:

- i. Power control loop is terminated (traffic power converges for every user)
- ii. Final BS transmit power levels are calculated (sum of all traffic, pilot and overhead)
- iii. Total BS broadcast power for the cell of interest is determined

(For each active user in the cell of interest)

- iv. Final geometry is calculated based on BS power levels calculated in ii.
- v. Traffic E_c/I_{or} target is determined based on geometries calculated in iv.
- vi. Achieved E_c/I_{or} is calculated based on BS power levels calculated in ii.
- vii. Success criterion is checked

$$\left(\frac{E_b}{N_r}\right)_{\text{achieved}} \stackrel{?}{\geq} \left(\frac{E_b}{N_o}\right)_{\text{target}} - \text{Success Threshold (dB)} \quad (\text{Eq. 41})$$

- viii. Success rate is determined for the cell of interest

Success Threshold is usually a small figure such as 0.5dB. Users who miss their E_c/I_{or} targets by more than the threshold suffer link quality degradation. Note that if call drops occurred within the power control loop, they should also be considered when success rate is determined:

$$\text{Success Rate} = \frac{\text{\#users meeting success criterion}}{\text{Total\#of active users including call drops}} \quad (\text{Eq. 42})$$

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