TK216: GSM Optimization

Duration

4.0 Days

Course Content

1. Introduction to GSM network

- 1.1. Network Architecture
- 1.2. GSM bands
- 1.3. The Access method TDMA
- 1.4. GSM Um interface
- 1.5. GSM link structure
- 1.6. TA, DTX, Frequency hopping, Power control Handover

2. Coverage Planning

- 2.1. Coverage requirements
- 2.2. Propagation mechanisms
- 2.3. Propagation modeling and link budget
- 2.4. Coverage site dimensioning
- 2.5. Planning tool - inputs, simulation and outputs

3. Traffic Engineering

- 3.1. Basics - Mean holding time, Intensity, Blocking & Queuing systems
- 3.2. Erlang B Table
- 3.3. Traffic forecasting & budgeting

4. Capacity and Frequency Planning

- 4.1. Frequency reuse concepts and Group planning

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4.2. Frequency reuse distance, C/I & Fade margins, reuse factor & Cell capacity

4.3. Automatic Frequency Planning

4.4. Fractional Load Planning (FLP)

5. Selecting Site Locations

5.1. Site selection criteria

5.2. Site Acquisition

6. Idle mode and Busy mode

6.1. Idle mode procedures

6.2. Cell selection

6.3. Cell re-selection

6.4. System information

6.5. Cell parameters

6.6. Handover algorithms

6.7 Power control Algorithms

7. GSM RAN Features and Performance Management Issues

7.1. GSM specifications and features

7.2. Performance management process, counter, KPI and optimization techniques

7.3. Load balancing features, parameters, KPI and optimization techniques

7.4. Capacity enhancement features, parameters, KPI and optimization techniques

7.5. QoS management features, parameters, KPI and optimization techniques

7.6. BSS energy saving features, parameters, KPI and optimization techniques

7.7. GSM call flow and signalling analysis

7.8. Location update

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7.9. Call Setup (MOC/MTC)

7.10. Intra- and Inter-BSC Handover

7.11. Call Release

7.12. Case study - Abnormal releases

7.13. Network testing

7.14. Functionality tests and Server Optimization

7.15. Tools, Setup and operating procedures

7.16. Understanding tools data, interpreting and troubleshooting

8. Initial Tuning

8.1. Antenna direction/tilt

8.2. Output power

8.3. Interference detection & Frequency re-tune

8.4. Neighbor list

8.5. Handover parameters

8.6. Power control parameters

9. Network Optimization

9.1. Handling poor C/N, C/I and C/A

9.2. Handover problems and solutions

9.3. Excessive load

9.4. Battery life-time and paging performance

10. Co-Existence Issues

10.1. GSM - WCDMA

10.2. GSM - LTE

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