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Microwave Path Engineering Fundamentals

Comsearch eLearning Center Online Training Course

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ABOUT THE COURSE

Microwave Path Engineering Fundamentals is designed to build subject matter expertise with a balanced mixture of both theory and real world examples. Learn through narrated slide shows, a running course example and mini-quizzes after each section.

There are NO COURSE PREREQUISITES.

COURSE LENGTH

Approximately 6–8 hours of self-paced lessons.

OBJECTIVE

By the end of this course, you will understand:

- Basic elements of a microwave path
- How propagation affects the design
- Practical factors that influence good path design
- Regulatory considerations

SECTION 1: Introduction

- History of communications
- What is a microwave path

SECTION 2: Microwave Components

- Radios
- Transmission Lines
- Antennas

SECTION 3: RF Propagation

- Free space path loss
- Fresnel zones
- K Factor
- LOS path clearance
- nLOS propagation
- Fading

SECTION 4: Path Reliability

- Factors that affect reliability
- What is an outage?
- Vigants method
- ITU method
- Fade margin
- Space diversity
- Effects of environmental factors
- Rain outages

SECTION 5: Microwave Path Design

- Nominal design
- Field survey
- Final path design
- Licensed vs. unlicensed
- Network planning
- EIRP limits
- U.S. frequency plans

SECTION 6: Path Survey

- Survey planning
- Terrain data
- Map datum
- Site survey
- Path profile verification

SECTION 7: Interference Analysis

- Interference impact
- T/I curves
- C/I calculation
- Fade margin

SECTION 8: Frequency Planning

- High / low plans
- Frequency plan conflicts (Bucking)
- Interference resolution methods
- U.S. Prior Coordination Procedure

SECTION 9: FCC Licensing (US ONLY)

- FCC application filing
- Completion of construction
- Conditional authorization

NOTE: Syllabus is subject to change.



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