(LTE Air Interface)
LONG TERMS EVOLUTION

1) - LTE Introduction

1.1: Overview and Objectives

1.2: User Expectation

1.3: Operator expectation

1.4: Mobile Broadband Evolution: the roadmap from HSPA to LTE

1.5: Technology comparison

- IEEE
- 3GPP
- 3GPP2

1.6: 3G Vs 4G Technology comparison

1.7: Requirements of LTE

- Peak data rate
- Up to 200 active users in a cell (5 Megahertz)
- Less than 5 millisecond user-plane latency

1.8: LTE Vs UMTS Network Architecture

1.9: LTE Network Architecture

1.10: Orthogonal frequency division multiplexing (OFDM)

1.11: Overview of LTE air interface

- MIMO
- HARQ

1.12: Key Features of LTE

- LTE uses adaptive modulation and coding
- LTE uses Advanced MIMO spatial multiplexing techniques
- LTE supports both FDD and TDD
- LTE offers scalable bandwidths.

1.13: FDD and TDD
1.14: FDD and TDD Bands
1.15: Terminals, modules and fixed wireless terminals
1.16: LTE UE Categories
1.17: LTE specification work
1.18: LTE Standard Specification

2) - EPS Architecture

2.1: Overview and Objectives
2.2: System Architecture Evolution (SAE)-Targets
2.3: Architecture Evolution
2.4: EPS Network Architecture
   - User Equipment (UE)
   - Evolved UTRAN (E-UTRAN)
   - Evolved Packet Core Network (EPC)
   - Services domain
2.5: Functionality of e-NodeB & UE
2.6: Functionality of MME
2.7: Functionality of S-GW
2.8: Functionality of P-GW
2.9: Functionality of PCRF
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   - Local Breakout model
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2.14: 3GPP and Non-3GPP Inter-working
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3.3: Tracking area update concept

- Tracking area
- Routing area

3.4: EPS Mobility Management (EMM) states

- Emm-Deregistered
- Emm-Registered

3.5: EPS connection management (ECM) state

3.6: RRC states in E-UTRAN

- RRC_IDLE state
- RRC_CONNECTED state

3.7: EPS bearer service architecture

3.8: EPS bearer services: Default bearer

3.9: EPS bearer services: Dedicated bearer

3.10: SAE Bearer QoS Awareness

3.11: SAE Bearer QoS Attributes

- GBR (Guaranteed Bit Rate) or NGBR (Non-Guaranteed Bit Rate)
- Maximum Bit rate(MBR)
- Label or QoS class Identifier(QCI)

3.12: QoS Class Identifier (QCI) Characteristic

- Resource type
- Priority
- Packet delay budget
- Packet loss rate

3.13: LTE / SAE Handover

3.14: LTE / SAE Handover principles

- Handover preparation
3.15: Handover Preparation
3.16: Handover Execution
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3.21: Basic Policy and Charging Control (PCC)
3.22: PCC in roaming with PMIP: home routed model
3.23: PCC in roaming: local breakout model

4) - Air Interface (OFDMA & SCFDMA)

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4.2: Duplexing and Multiple Access
   - Orthogonal Frequency Division Multiple Access (OFDMA)
   - Single Carrier Frequency Division Multiple Access (SC-FDMA)

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4.4: LTE Multiple Access Background: FDMA Principle
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4.15: OFDM Key Parameters 2

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6.7: Interfaces & Protocols in EPS Network-Control Plane
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- IP

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6.13: LTE Downlink Logical Channels
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- Broadcast Control Channel (BCCH)
- Common Control Channel (CCCH)
- Dedicated Control Channel (DCCH)
- Dedicated Traffic Channel (DTCH)
- Multicast Control Channel (MCCH)
- Multicast Traffic Channel (MTCH)

6.14: LTE Downlink Transport Channels
- Paging Channel (PCH)
- Broadcast Channel (BCH)
- Multicast Channel (MCH)
- Downlink Shared Channel (DL-SCH)

6.15: LTE Downlink Physical Channels
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- Physical Downlink Control Channel (PDCCH)
- Physical Hybrid ARQ Indicator Channel (PHICH)
- Physical Broadcast Channel (PBCH)
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6.17: LTE Uplink Logical Channels
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7.3: CQI Measurements

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