



## GSM, UMTS и LTE радио интерфейси

Спецификациите на радио интерфейса на мрежата на Yettel са базирани на ETSI/3GPP. Цитираните в документа стандарти могат да бъдат намерени на следните интернет адреси:

[www.etsi.org](http://www.etsi.org) или [www.3gpp.org](http://www.3gpp.org)

### 1. Стандарти за физическото ниво (Layer 1) на радио интерфейса

Характеристиките на физическото ниво на радио интерфейса, на GSM мрежата на Yettel, отговарят на следните стандарти:

Спецификация	Описание
ETSI GSM 04.04	Layer1; General requirements
ETSI GSM 05.01	Physical layer on the radio path; General description
ETSI GSM 05.02	Multiplexing and multiple access on radio path
ETSI GSM 05.03	Channel coding
ETSI GSM 05.04	Modulation
ETSI GSM 05.05	Radio transmission and reception for mobile stations
ETSI GSM 05.08	Radio transmission and reception for base transceiver stations
ETSI GSM 05.10	Radio subsystem synchronization

таблица

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Характеристиките на физическото ниво на радио интерфейса, на UMTS мрежата на Yettel, отговарят на следните стандарти:

Спецификация	Описание
3GPP TS 25.101	User Equipment (UE) radio transmission and reception (FDD)
3GPP TS 25.104	Base Station (BS) radio transmission and reception (FDD)
3GPP TS 25.106	UTRA repeater radio transmission and reception
3GPP TS 25.113	Base station and repeater electromagnetic compatibility (EMC)
3GPP TS 25.133	Requirements for support of radio resource management (FDD)
3GPP TS 25.141	Base Station (BS) conformance testing (FDD)
3GPP TS 25.143	UTRA repeater conformance testing
3GPP TS 25.201	Physical layer - general description
3GPP TS 25.211	Physical channels and mapping of transport channels onto physical channels (FDD)
3GPP TS 25.212	Multiplexing and channel coding (FDD)
3GPP TS 25.213	Spreading and modulation (FDD)
3GPP TS 25.214	Physical layer procedures (FDD)
3GPP TS 25.215	Physical layer; Measurements (FDD)
3GPP TS 25.301	Radio interface protocol architecture

таблица

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Характеристиките на физическото ниво на радио интерфейса, на LTE мрежата на Yettel, отговарят на следните стандарти:

Спецификация	Описание
3GPP TS 36.201	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description
3GPP TS 36.211	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation
3GPP TS 36.212	Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding
3GPP TS 36.213	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures
3GPP TS 36.214	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

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## 2. Стандарти за второ (Layer 2) и трето (Layer 3) ниво на радио интерфейса

Характеристиките на второ (Layer 2) и трето (Layer 3) ниво, на GSM мрежата на Yettel, отговарят на следните стандарти:

Спецификация	Описание
ETSI GSM 04.05	Digital cellular telecommunications system; Data Link (DL) layer; General aspects
ETSI GSM 04.06	Digital cellular telecommunications system (Phase 2+); Mobile Station – Base Station System (MS – BSS) interface; Data Link (DL) layer specification
ETSI GSM 04.07	Mobile radio interface signaling layer 3; General Aspects
ETSI GSM 04.08	Mobile radio interface Layer 3 specification; Core network protocols; Stage 3
ETSI GSM 04.10	Mobile Radio Interface Layer 3 - Supplementary Services Specification - General Aspects
ETSI GSM 04.11	Point-to-Point (PP) Short Message Service (SMS) support on Mobile Radio Interface
ETSI GSM 04.60	Digital cellular telecommunications system (Phase 2+) (GSM); General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control / Medium Access Control (RLC/MAC) protocol
3GPP TS 45.008	Radio subsystem link control
3GPP TS 44.018	Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol

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Характеристиките на второ (Layer 2) и трето (Layer 3) ниво, на UMTS мрежата на Yettel, отговарят на следните стандарти:

Спецификация	Описание
3GPP TS 25.301	Radio interface protocol architecture
3GPP TS 25.302	Services provided by the physical layer
3GPP TS 25.303	Interlayer procedures in Connected Mode
3GPP TS 25.304	User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode
3GPP TS 25.305	User Equipment (UE) positioning in Universal Terrestrial Radio Access Network (UTRAN); Stage 2
3GPP TS 25.306	UE Radio Access capabilities definition
3GPP TS 25.307	Requirements on User Equipments (Ues) supporting a release-independent frequency band
3GPP TS 25.308	UTRA High Speed Downlink Packet Access (HSPDA); Overall description; Stage 2
3GPP TS 25.321	Medium Access Control (MAC) protocol specification
3GPP TS 25.322	Radio Link Control (RLC) protocol specification
3GPP TS 25.323	Packet Data Convergence Protocol (PDCP) specification
3GPP TS 25.324	Broadcast/Multicast Control (BMC)
3GPP TS 25.331	Radio Resource Control (RRC) protocol specification

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Характеристиките на второ (Layer 2) и трето (Layer 3) ниво, на LTE мрежата на Yettel, отговарят на следните 3GPP стандарти:

Спецификация	Описание
3GPP TS 23.216	Single Radio Voice Call Continuity (SRVCC)
3GPP TS 36.300	E-UTRAN Overall description; Stage 2 (E-UTRAN); Overall description; Stage 2
3GPP TS 36.302	Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer
3GPP TS 36.304	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode
3GPP TS 36.305	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specifications of User Equipment (UE) positioning in E-UTRAN
3GPP TS 36.306	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities
3GPP TS 36.307	Requirements on User Equipments (UEs) Supporting a release-independent frequency band
3GPP TS 36.314	Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements
3GPP TS 36.321	Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification
3GPP TS 36.322	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification
3GPP TS 36.323	Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification
3GPP TS 36.331	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification

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### 3. Други характеристики

#### 3.1. Безопасност

Съобразена с изискванията посочени в European Community Directive 73/23/EEC

#### 3.2. Електромагнитна съвместимост (EMC)

Съобразена с изискванията посочени в European Community Directive 89/33/EEC

#### 3.3. Радио-честотен спектър. Радио-честотния спектър използван в мрежата на Yettel е както следва:

##### 900 MHz лента

905,5-914,9MHz и 882,1-883,9MHz – предаване от мобилни устройства към базови станции

950,5-959,9MHz и 927,1-928,9MHz – предаване от базови станции към мобилни устройства

##### 1800 MHz лента

1735-1755 MHz - предаване от мобилни устройства към базова станция

1830-1850 MHz – предаване от базови станции към мобилни устройства

##### 2100 MHz лента

1920-1940MHz – предаване от мобилни устройства към базови станции

2110-2130MHz – предаване от базови станции към мобилни устройства