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# Regulations

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## Fixed Radio Systems

Version 3.0

Document Date: 27 December 2021

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Telecommunications and Digital Government Regulatory Authority (TDRA)  
P O Box 26662, Abu Dhabi, United Arab Emirates (UAE)  
[www.tdra.gov.ae](http://www.tdra.gov.ae)

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**TDRA Regulations for Fixed Radio Systems, Version 3.0**

**Article (1)  
Scope of Document**

- 1.1 These regulations are issued in accordance with the provisions of the UAE Federal Law by Decree No 3 of 2003 (Telecom Law) as amended and its Executive Order.
- 1.2 These regulations comprise regulatory provisions and technical conditions for the authorization and use of Fixed Radio Systems. These regulations shall be read in conjunction with the following regulatory instruments issued by the TDRA and available on TDRA website at [www.tdra.gov.ae](http://www.tdra.gov.ae):
  - 1.2.1 Spectrum Allocation and Assignment Regulations.
  - 1.2.2 Spectrum Fees Regulations.
  - 1.2.3 Interference Management Regulations.
  - 1.2.4 National Frequency Plan including National Table of Frequency Allocation.

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**Article (2)**  
**Definitions**

- 2.1 The terms, words and phrases used in these Regulations shall have the same meaning as is ascribed to them in the UAE Federal Law by Decree No 3 of 2003 (Telecom Law) as amended and its Executive Order; unless these Regulations expressly provide otherwise for, or the context in which those terms, words and phrases are used in these Regulations indicates otherwise. The following terms and words shall be interpreted, as follows:
- 2.1.1 “**3GPP**” means the 3<sup>rd</sup> Generation Partnership Project (3GPP) which consists of telecommunications standard development organizations worldwide to develop Specifications of relevant 3GPP cellular telecommunications technologies including radio access, core network, service capabilities and interworking with non-3GPP networks.
- 2.1.2 “**Applicant**” means any Person who has applied for a License or an Authorization in accordance with the Telecom Law or other Regulatory Instruments issued by the Authority.
- 2.1.3 “**Application**” means the request for issuance of a License or an Authorization, received at the Authority on prescribed forms as per the procedure in vogue.
- 2.1.4 “**Authority**” or “**TDRA**” means the General Authority for Regulating the Digital Government and Telecommunication Sector known as Telecommunications and Digital Government Regulatory Authority (TDRA) established pursuant to the provisions of Federal Law by Decree No. 3 of 2003 (as amended).
- 2.1.5 “**Authorization**” or “**Frequency Spectrum Authorization**” means a valid frequency spectrum authorization issued by the Authority and permits the use of radio frequency subject to terms and conditions as stipulated by the Authority.
- 2.1.6 “**CCDP**” means co-channel dual-polarization transmission to provide two parallel communication channels over the same link with orthogonal polarizations
- 2.1.7 “**Earth Station**” means a Station located either on the Earth's surface or within the major portion of the Earth's atmosphere and is intended for communication with one or more space stations, or with one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.
- 2.1.8 “**ETSI**” means the European Telecommunications Standards Institute that produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and Internet technologies.
- 2.1.9 “**Fixed Wireless Access**” or “**FWA**” means a wireless access Application in which the location of the end-user termination and the network access point to be connected to provide data access.

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- 2.1.10 “**Fixed Satellite Service**” or “**FSS**” means a Radiocommunication Service between Earth Stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas.
- 2.1.11 “**IEEE**” means the Institute of Electrical and Electronics Engineers.
- 2.1.12 “**ITU**” means the International Telecommunication Union, a leading United Nations agency for information and communication technologies.
- 2.1.13 “**Mesh Network**” is a way to route data, voice and instructions between nodes. It allows for continuous connections and reconfiguration around broken or blocked paths by ‘hopping’ from node to node until the destination is reached.
- 2.1.14 “**MIMO**” means Multiple Input Multiple Output
- 2.1.15 “**National Frequency Plan**” means Radio Frequency Allocation plan for the UAE
- 2.1.16 “**Person**” will include ‘juridical entities’ as well as ‘natural persons’.
- 2.1.17 “**Point-to-Point**” or “**PTP**” means communication provided by a single connection or link between two stations located at specified fixed points, or multiple cascaded links made by a number of intermediate repeaters with or without partial payload drop insert through radio relay.
- 2.1.18 “**Point-to-Multipoint**” or “**PMP**” is a method of communication between a series of transceivers through a central transceiver.
- 2.1.19 “**Radar**” means Radio Detection and Ranging.
- 2.1.20 “**Radiocommunication Service**” means the transmitting and/or receiving of Radio Frequencies which may be used for the conveyance of data, or messages or voice or visual images, or for the operation or control of machinery or apparatus.
- 2.1.21 “**Radiolocation Service**” means a service (like Radar) that uses radio signals to detect and locate distant objects like aircraft.
- 2.1.22 “**Radio Regulations**” or “**RR**” means the publication issued by the ITU, adopted by the World Radiocommunication Conference and ratified by the UAE.
- 2.1.23 “**Secondary Basis**” means Radiocommunication Service which shall not cause harmful interference to stations of Primary Services and cannot claim protection from harmful interference from stations of Primary Services. This service appears as lower case in the National Spectrum Plan.
- 2.1.24 “**Station**” means one or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a Radiocommunication Service.

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- 2.1.25 “**Supervisory Control and Data Acquisition**” or “**SCADA**” systems are used for process monitoring and control, including the gathering of data in real time from remote location in order to control equipment and conditions. SCADA is used in power plants as well as in oil and gas refining, telecommunication, transportation, and water and waste control.
- 2.1.26 “**Wideband Data Transmission**” equipment means equipment complying with technical specifications as set out in ETSI EN 300 328. This includes equipment based on IEEE 802.11 family of standards.
- 2.1.27 “**Wireless Access Systems**” or “**WAS**” means connected wireless equipment complying with technical specifications as set out in ITU-R Recommendations, ETSI standards, IEEE 802.11 family of standards, or related 3GPP standards. This includes networks such as (Radio Local Area Network (RLAN), Wireless Local Area Network (WLAN), Wideband Data Transmission, Multiple Gigabit Wireless Systems (MGWS), Broadband Radio Access Networks (BRAN) etc.) in different frequency ranges.
- 2.1.28 “**UAE**” or “**State**” means the United Arab Emirates including its territorial waters and the airspace above.
- 2.1.29 “**XPIC**” means cross polarization interference cancellation.

**Article (3)**

**Uses related to Fixed Radio**

- 3.1 The Application for fixed radio Authorization can be made for the following:
  - 3.1.1 Point-to-Point (PTP) links.
  - 3.1.2 Fixed Wireless Access (FWA).
  - 3.1.3 Point-to-multipoint Multipoint (PMP) links, Mesh, and SCADA.
- 3.2 The Applicant shall apply for fixed radio Authorization in accordance with these regulations.

## Article (4) Technical Conditions

- 4.1 The fixed radio stations shall be operated in accordance to the provisions of the Radio Regulations and relevant ITU-R Recommendations. The following table provides guidance on available frequency ranges and preferred ITU-R Recommendations. For more information on channel arrangements please refer to the guidelines separately published by TDRA.
- 4.2 The following table is not an exhaustive list for fixed radio. The national frequency allocation table shall be the reference for fixed radio allocations and assignments.

Frequency Range	Usage	ITU-R Rec
230-380 MHz 406.1-450 MHz	FWA, PMP, Mesh, or SCADA (in rural areas on a Secondary basis and when higher frequency ranges are not suitable)	
2400-2483.5 MHz	Point-to-Point on a Secondary basis Point-to-Multipoint on a Secondary basis WAS (e.g. Wideband Data Transmission)	
3400-3600 MHz	Fixed Wireless Access <sup>1</sup>	ITU-R F.1488
3600-3800 MHz	Fixed Wireless Access <sup>2</sup> Point-to-Point <sup>3</sup>	ITU-R F.1488
4400-5000 MHz	Point-to-Point Point-to-Multipoint	ITU-R F.1099
5650-5725 MHz	Point-to-Point on a Secondary basis Point-to-Multipoint on a Secondary basis	
5725-5925 MHz	Point-to-Point Point-to-Multipoint	
5925-6425 MHz	Point-to-Point	ITU-R F.383
6425 - 7110 MHz	Point-to-Point	ITU-R F.384
7110 - 7725 MHz	Point-to-Point	ITU-R F.385
7725 - 8725 MHz	Point-to-Point	ITU-R F.386
10-10.68 GHz	Point-to-Point	ITU-R F.747
10.7-11.7 GHz	Point-to-Point Fixed Wireless Access	ITU-R F.387
11.7-12.75 GHz	Point-to-Point Fixed Wireless Access	ITU-R F.746
12.75 – 13.25 GHz	Point-to-Point Fixed Wireless Access	ITU-R F.497

<sup>1</sup> Stations of the fixed service (FWA) should co-exist with and protect the existing Earth Stations of Fixed Satellite Service in the frequency band 3400 - 3600 MHz.

<sup>2</sup> Stations of the fixed service (FWA) should co-exist with and protect the existing Earth Stations of Fixed Satellite Service in the frequency band 3600 - 3800 MHz.

<sup>3</sup> New approvals for PTP links using 3600 – 3800 MHz will not be granted from 1 January 2022, only existing Authorizations for PTP links using 3600 – 3800 MHz can be renewed, as appropriate with a phase-out plan.

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Frequency Range	Usage	ITU-R Rec
13.4-14.4 GHz	Point-to-Point Fixed Wireless Access	
14.4-15.35 GHz	Point-to-Point Fixed Wireless Access	ITU-R F.636
15.7-17.3 GHz	Point-to-Point <sup>4</sup>	
17.7-19.7 GHz	Point-to-Point	ITU-R F.595
21.2-23.6 GHz	Point-to-Point	ITU-R F.637
24.25-27.5 GHz	Point-to-Point <sup>5</sup> Fixed Wireless Access	ITU-R F.748
27.5-29.5 GHz	Point-to-Point	ITU-R F.748
31-31.3 GHz	Point-to-Point	ITU-R F.746
31.8-33.4 GHz	Point-to-Point	ITU-R F.1520
36.0 - 40.5 GHz	Point-to-Point	ITU-R F.749
40.5 - 43.5 GHz	Point-to-Point	ITU-R F.2005
51.4 - 52.6 GHz	Point-to-Point	ITU-R F.1496
55.78-66 GHz	Point-to-Point	ITU-R F.1497
71-76 GHz / 81-86 GHz	Point-to-Point	ITU-R F.2006
92 - 94 GHz	Point-to-Point	ITU-R F.2004

- 4.3 The links shall be planned based on a mean propagation availability of 99.9% for the overall link budget calculation, taking into account relevant ITU-R Recommendations. The operational EIRP will be determined on the basis of the minimum power required to meet the propagation availability requirements of the Applicant and will be specified as an authorization condition.
- 4.4 The TDRA encourages the use of hot standby and space diversity for backbone links to improve the service availability and the use of system features like CCDP with XPIC or use of advanced antenna systems (MIMO etc.) to improve spectral efficiency. To ensure the efficient usage of frequency, frequency diversity is generally not preferred. For the use of frequency diversity, Applicant shall provide technical justification with the Application.
- 4.5 Space diversity (including the use of advanced antenna systems such as MIMO) will be considered as the same link. Frequency diversity is considered as multiple links.
- 4.6 The lower frequency bands are known to have propagation characteristics suitable for longer hop lengths. To avoid congestion in the lower bands,

<sup>4</sup> Radiolocation Service is preferred with a higher priority in the 15.7-17.3 GHz in accordance with National Frequency Plan.

<sup>5</sup> New approvals for PTP links using 24.25 – 27.5 GHz will not be granted from 1 January 2022 due to use of IMT Applications in this band, only existing Authorizations for PTP links using 24.25 – 27.5 GHz can be renewed, as appropriate with a phase-out plan.

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Applicants shall use where possible the higher frequency bands. Only where the required hop length and availability cannot be achieved in the higher frequency bands the lower frequency bands shall be considered.

- 4.7 Only directive antennas shall be allowed for point-to-point links.
- 4.8 For point-to-point links the TDRA encourages the use of radio systems, including antennas, that comply with the appropriate specifications set out in ETSI EN 302 217 Series “Fixed Radio Systems - Characteristics and requirements for point-to-point equipment and antennas”. The equipment should meet ETSI spectral efficiency class 2 or above.
- 4.9 For point-to-multipoint systems the TDRA encourages the use of systems, including antennas, that comply with the appropriate specifications set out in ETSI EN 302 306 series “Fixed Radio Systems - Multipoint Equipment and Antennas” or relevant 3GPP specifications.

**Article (5)**

**Spectrum Coordination and Notification**

- 5.1 Coordination of Radio Frequencies for radio Stations at the national, regional and international levels shall be made through the Authority, as it is the sole body responsible for radio frequency coordination.
- 5.2 Notifying and Registering of Radio Frequencies in the ITU shall be made through the Authority according to the procedures outlined in the Radio Regulations.
- 5.3 The Applicant shall support the coordination procedures.