

# Regulations

---

## Earth Stations

**Version 2.0**

**Document Date: 17 March 2016**

## 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 This document comprises technical regulations for the authorization of Earth Stations. It shall be read in conjunction with the following documents available from the TRA website at [www.tra.gov.ae](http://www.tra.gov.ae):
  - 1.2.1 Spectrum Allocation and Assignment Regulations
  - 1.2.2 Spectrum Fees Regulation
  - 1.2.3 Interference Management Regulations
  - 1.2.4 National Frequency Plan

## Article (2)

### Definitions

- 2.1 The terms, words and phrases used in these Regulations shall have the same meaning as ascribed to them in the Telecom Law (Federal Law by Decree No. 3 of 2003 as amended) and its Executive Order. In addition, these Regulations expressly provide for the meaning and context in which those terms shall be interpreted, as follows:
  - 2.1.1 “**Aeronautical Mobile Satellite Service**” means a mobile-satellite service in which mobile earth stations are located on board aircraft.
  - 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 (TRA)**” means the General Authority for Regulating the Telecommunication Sector known as Telecommunications Regulatory Authority (TRA) established pursuant to the provisions of Article 6 of Federal Law by Decree No. 3 of 2003.

- 2.1.5 “Authorization”** means a valid frequency spectrum authorization issued by the TRA and permits the use of radio frequency subject to terms and conditions as stipulated by the TRA.
- 2.1.6 “Broadcasting Satellite Service”** means a radio-communication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.
- 2.1.7 “DSNG”** means Digital Satellite News Gathering.
- 2.1.8 “Earth exploration satellite service (EESS)”** means a radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on Earth satellites or from airborne or Earth-based platforms.
- 2.1.9 “Earth Station”** means a Station located either on the Earth's surface or within the major portion of the Earth's atmosphere, which has an antenna diameter of more than 2.4 meters, 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.
- 2.1.10 “Earth Station in Motion (ESIM)”** means Earth Stations that are operated in accordance with ITU-R Resolution COM152 (WRC-15).
- 2.1.11 “Earth Station on board Vessel (ESV)”** means Earths Stations operated on ships in accordance with ITU-R Resolution 902.
- 2.1.12 “Fixed Service”** means a Radiocommunication Service between specified fixed points.
- 2.1.13 “Fixed Satellite Service (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.
- 2.1.14 “Geo-Stationary Orbit (GSO)”** means the orbit of a satellite whose circular and direct orbit lies in the plane of the Earth's equator and remains fixed relative to the Earth.
- 2.1.15 “Harmful Interference”** means Interference which impairs the functioning of a Radiocommunication Service or which materially degrades or obstructs or repeatedly interrupts a Radiocommunication Service.
- 2.1.16 “ITU”** means International Telecommunication Union, a leading United Nations agency for information and communication technologies.

- 2.1.17 “Low-water mark”** means the intersection of the low-water tidal plane with the land and includes the low-water line on a low-tide elevation.
- 2.1.18 “Minimum Distance”** means the distances from low water mark as specified in ITU-R Resolution 902.
- 2.1.19 “Meteorological satellite service”** means an earth exploration-satellite service for meteorological purposes.
- 2.1.20 “Maritime Mobile-Satellite Service”** means a mobile-satellite service in which mobile earth stations are located on board ships.
- 2.1.21 “Mobile-Satellite Service”** means a radiocommunication service between mobile earth stations and one or more space stations, or between space stations used by this service; or— between mobile earth stations by means of one or more space stations.
- 2.1.22 “Network Control and Monitoring Centre”** monitors, coordinates and controls the operational activities of Earth Station.
- 2.1.23 “Radio Regulations”** means a publication issued by the ITU, adopted by the World Radiocommunication Conference and ratified by the UAE.
- 2.1.24 “Satellite”** means a body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.
- 2.1.25 “Secondary Basis”** means the order of a Radiocommunication Service where it 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.
- 2.1.26 “Space Station”** means a Station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.
- 2.1.27 “Territorial waters”** means “territorial sea”, as defined in the UN Convention on the Law of the Sea (UNCLOS, 1982), excluding internal waters, harbours, and ports.
- 2.1.28 “UAE”** means the United Arab Emirates including its territorial waters and the airspace above.
- 2.1.29 “VSAT”** means Very Small Aperture Terminal.
- 2.1.30 “WRC”** means World Radiocommunication Conference of the ITU.

## Article (3)

### Uses related to Earth Stations

- 3.1 Usage of Earth Station is allowed but not limited to the following space radio services:
- 3.1.1 Fixed Satellite Service
  - 3.1.2 Mobile Satellite Service
  - 3.1.3 Broadcasting Satellite Service
  - 3.1.4 Meteorological Satellite Service
  - 3.1.5 Earth Exploration Satellite Services
- 3.2 Earth Station use will be authorized for the following categories:
- 3.2.1 **Earth Station Authorization:** Fixed Earth Stations (including feeder links) with Antenna sizes of 2.4m and above.
  - 3.2.2 **VSAT Authorization:** Fixed Earth Stations with antennas sizes less than 2.4m.
  - 3.2.3 **DSNG Authorisation:** Transportable Earth Stations with antennas sizes less than 2.4m.
  - 3.2.4 **ESIM Authorization:** Earth Station in Motion (ESIM) installed on any land mobile platform.
- 3.3 Earth Stations installed on a vessel are authorized as part of the ship license according to technical requirements as stated in Article 5 for ESV and Article 6 for ESIM. Other earth stations operating in the maritime mobile-satellite service shall comply with the coordination agreements of the satellite networks with which this Earth Station is associated.
- 3.4 Earth Stations installed on an aircraft are authorized as part of the aircraft license according technical requirements as stated in Article 6 for ESIM. Other Earth Stations operating in the aeronautical mobile-satellite service shall comply with the coordination agreements of the satellite networks with which this Earth Station is associated.

## Article (4)

### Technical Conditions

- 4.1 The Earth Station shall be operated in accordance to the provisions of the Radio Regulations and relevant ITU-R Recommendations.
- 4.2 The following table gives guidance on available frequency ranges for different authorization types:

Authorization Type	Available Frequency Ranges
Earth Station Authorization	Various frequency ranges as identified for satellite service in the national table of frequency allocation.
VSAT Authorization	<p><b><u>Frequency ranges in C-Band</u></b>            3.4 - 4.2 GHz (Space-to-Earth)            4.5 - 4.8 GHz (Space-to-Earth)            5.15 - 5.25 GHz (Earth-to-Space)            5.725 - 6.7 GHz (Earth-to-Space)</p> <p><b><u>Frequency ranges in Ku – Band</u></b>            10.7 - 11.7 GHz (Space-to-Earth) / (Earth-to-Space)            12.5 - 13.25 GHz (Space-to-Earth) / (Earth-to-Space)            13.75 -14.8 GHz (Earth-to-Space)</p> <p><b><u>Frequency ranges in Ka-Band</u></b>            19.7 - 21.2 GHz (Space-to-Earth)            27.5 – 31 GHz (Earth-to-Space)</p>
DSNG Authorization	<p><b><u>Frequency ranges in Ku – Band</u></b>            10.7 - 11.7 GHz (Space-to-Earth) / (Earth-to-Space)            12.5 - 13.25 GHz (Space-to-Earth) / (Earth-to-Space)            13.75 -14.8 GHz (Earth-to-Space)</p> <p><b><u>Frequency ranges in Ka-Band</u></b>            19.7 - 21.2 GHz (Space-to-Earth)            27.5 – 31 GHz (Earth-to-Space)</p>
ESIM Authorization	<p><b><u>Frequency ranges in Ka-band</u></b>            19.7-20.2 GHz (Space-to-Earth)            29.5-30.0 GHz (Earth-to-Space)</p>

<p>Earth Station installed on Vessel (ESV)</p>	<p><b><u>Frequency Ranges in L-Band</u></b>                  1.518 – 1.559 GHz                  1.626.5 – 1.6605 GHz                  1.668 – 1.675 GHz</p> <p><b><u>Frequency Ranges in C-Band</u></b>                  3.7 – 4.2 GHz (Space-to-Earth)                  5.925 – 6.425 GHz (Earth-to-Space)</p> <p><b><u>Frequency Ranges in Ku – Band</u></b>                  10.70 – 12.75 GHz (Space-to-Earth)                  14.0 – 14.50 GHz (Earth-to-Space)</p> <p><b><u>Frequency Ranges in Ka - Band</u></b>                  19.7-20.2 GHz (Space-to-Earth)                  29.5-30.0 GHz (Earth-to-Space)</p>
<p>Earth Station installed on Aircraft (ESA)</p>	<p><b><u>Frequency Ranges in L-Band</u></b>                  1.518 – 1.559 GHz                  1.626.5 – 1.6605 GHz                  1.668 – 1.675 GHz</p> <p><b><u>Frequency Ranges in Ka - Band</u></b>                  19.7-20.2 GHz (Space-to-Earth)                  29.5-30.0 GHz (Earth-to-Space)</p>

- 4.3 The Earth Station shall be operated within the envelope of the coordination agreements of the satellite networks with which this Earth Station is associated.
- 4.4 Elevation angles for transmitting Earth Station antennas shall not be less than 3 degrees measured from the horizontal plane to the direction of maximum radiation.
- 4.5 Antenna radiation pattern shall comply with the minimum performance criteria as specified by Recommendation ITU-R S.580.
- 4.6 DSNG Authorised User shall be responsible to obtain all the necessary media production, filming and shooting permissions from the relevant authorities.

**Article (5)**

**Use of Earth Stations on board Vessels (ESV) in accordance with ITU-R Resolution 902**

- 5.1 The use of ESV on board UAE registered ships in frequency ranges 5925 – 6425 MHz, 3700 – 4200 MHz, 10.70 – 12.75 and 14.0 – 14.50 GHz is subject to individual authorization. Applications can be made for any UAE registered ship.
- 5.2 UAE registered ships may be able to use the ESV in the Territorial waters of other States if the National regulations of that State allow such use. The responsibility to adhere to the National regulations within the Territorial waters of each State lies with the ship owner and/or ship operator.
- 5.3 Foreign registered vessels may be able to use the ESV in the zone between Territorial waters of the UAE and Minimum Distance if their Ship Radio License includes the ESV and adherence to the conditions as set in these Regulations.
- 5.4 The Licensing Administration of foreign registered vessels intending to use ESV in the Minimum Distance shall provide the Authority a point of contact.
- 5.5 The use of ESV in the zone between Territorial Waters of the UAE and the Minimum Distances are authorized on Secondary Basis subject to the adherence to the conditions as set in these regulations and in ITU-R Res 902.
- 5.6 The ESV shall be turned OFF in the UAE Territorial Waters in all cases.
- 5.7 The ESV shall include a control mechanism based on GPS for sensing and controlling the On/Off, upon crossing of boundaries as mentioned in these Regulations.
- 5.8 In all conditions whatsoever, the ESV shall be switched OFF immediately if directed by the Authority.
- 5.9 UAE registered ships requiring ESV coordination for use in the Minimum Distance of other countries can request the Authority for facilitating this coordination at the Administration level.
- 5.10 The ESV usage within the Minimum Distances shall be in accordance with the technical conditions as stated in the table below:

<b>Frequency Range</b>	Earth to Space	5925 – 6425 MHz	14.0 – 14.50 GHz
	Space to Earth	3700 – 4200 MHz	10.70 – 12.75 GHz
<b>Minimum Distance</b>		300 km	125 km
<b>Minimum Antenna Diameter</b>		2.4 m	1.2 m
<b>Minimum Elevation Angle</b>		3°	3°
<b>Antenna Tracking Accuracy</b>		+/- 0.2° (peak)	+/- 0.2° (peak)
<b>Max. e.i.r.p spectral density toward the horizon</b>		17 dB (W/MHz)	12.5 dB(W/MHz)



<b>Max. e.i.r.p toward the horizon</b>	20.8 dBW	16.3 dBW
<b>Max. off-axis e.i.r.p density</b>	ITU-R Res. 902 Annex 2	ITU-R Res. 902 Annex 2
<b>Applicable Standard</b>	ITU-R Res.902	ITU-R Res.902

- 5.11 The UAE has Fixed Services and operational and planned Satellite Earth Stations in the bands authorized for ESV usage. These services shall have protection from harmful interference from ESV. In case of any interference reported to UAE Fixed Services or UAE Earth stations as a result of ESV operation whether close or outside the UAE territorial waters, the ESV will immediately cease its transmissions.
- 5.12 The coordination criteria as given in ITU-R Recommendation SF.1649 shall be used to evaluate if ESV can cause harmful interference to Fixed Services.

### Article (6)

#### Use of Earth Stations in Motion (ESIM) in accordance with ITU-R Resolution 156 (WRC-15)

- 6.1 The use of ESIM with GSO FSS space stations in the frequency ranges 19.7-20.2 GHz and 29.5- 30.0 GHz at UAE registered ships, aircraft or land mobile platforms within the UAE is subject to individual authorization.
- 6.2 The ESIM shall remain within the envelope of the coordination agreements of the satellite networks with which this earth station is associated or, in the absence of such agreements, comply with the off-axis e.i.r.p. density levels given in Annex 1 of ITU-R Resolution COM152.
- 6.3 The earth station in motion shall not claim protection or impose constraints on the development of terrestrial services operating in the frequency band 19.7-20.1 GHz in countries listed in RR. 5.542.
- 6.4 Maritime ESIM operating in international waters and aeronautical ESIM operating in international airspace shall not cause unacceptable interference to any terrestrial systems operating in the frequency band 29.5-29.9 GHz in countries listed in RR 5.542.

- 6.5 Upon receipt of a report of harmful interference with respect to any terrestrial systems operating in the countries listed in RR 5.542, interference shall be immediately ceased or reduced to the acceptable level.
- 6.6 The ESIM shall be subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCCM) or equivalent facility and be capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCCM.
- 6.7 The ESIM shall employ techniques to track the associated GSO FSS satellite and shall be resistant to capturing and tracking adjacent GSO satellites.
- 6.8 The ESIM shall not be used or relied upon for safety-of-life applications.
- 6.9 The operator shall provide a point of contact for the purpose of tracing any suspected cases of interference from ESIM.

### **Article (7)**

#### **Spectrum Coordination and Notification**

- 7.1 Coordinating 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.
- 7.2 Notifying and Registering of Radio Frequencies in the ITU shall be made through the Authority according to the procedures outlined in the Radio Regulations.
- 7.3 The applicant shall support the coordination procedures.