
Regulations

Earth Stations

Version 3.0

Document Date: 20 March 2019

Telecommunications Regulatory Authority (TRA)
P O Box 26662, Abu Dhabi, United Arab Emirates (UAE)
www.tra.gov.ae

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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 comprises technical regulations for the Authorization of Earth Stations. These regulations shall be read in conjunction with the following regulatory instruments issued by the TRA and available on TRA's website at www.tra.gov.ae:
 - 1.4.1 Spectrum Allocation and Assignment Regulations;
 - 1.4.2 Spectrum Fees Regulation;
 - 1.4.3 Interference Management Regulations;
 - 1.4.4 National Frequency Plan and its Table of Frequency Allocations;
 - 1.4.5 Regulatory Policy for Space Services;
 - 1.4.6 Aeronautical Radio Systems Regulations, and
 - 1.4.7 Coordination of Satellite Networks Guidelines.

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 "**Administration**" means any governmental department (whether in the UAE or another member state of the ITU) which is responsible for undertaking the obligations set out in the ITU Constitution and Convention and in the Administrative Regulations.
 - 2.1.2 "**Aeronautical Mobile-Satellite Service**" means a Mobile-Satellite Service in which Mobile Earth Stations are located on board aircraft.
 - 2.1.3 "**AES**" or "**Aircraft Earth Station**" means a Satellite Earth Station installed on an Aircraft.
 - 2.1.4 "**Aircraft Radio License**" means an Authorization issued by the TRA to permit the operation of all radio equipment on the aircraft necessary for communication, navigation, and surveillance purposes.
 - 2.1.5 "**Allocation**" means the entry of a designated frequency or frequency band in the National Frequency Plan for use by one or more users for a terrestrial or space radiocommunications service in the UAE.

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- 2.1.6 “**Applicant**” in this instance means any Person who has applied for a Ship or Aircraft Radio License or an Authorization for an Earth Station in accordance with the Telecom Law or other Regulatory Instruments issued by the Authority.
- 2.1.7 “**Authority or 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 (as amended).
- 2.1.8 “**Authorization**” or “**Frequency Spectrum 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.
- 2.1.9 “**Class Authorization**” means the Authorization which permits the operation of wireless equipment by any Person within designated frequency bands subject to the terms and conditions stipulated by the TRA.
- 2.1.10 “**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.
- 2.1.11 “**ESIM**” or “**Earth Station in Motion**” means Earth Stations that are operated in accordance with ITU RR Resolution 156 (WRC-15).
- 2.1.12 “**ESV**” or “**Earth Station on board Vessel**” means Earth Stations operated on ships in accordance with ITU RR Resolution 902 (WRC-03).
- 2.1.13 “**FSS**” or “**Fixed-Satellite Service**” 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 “**Fixed Service**” means a radiocommunication service between specified fixed points.
- 2.1.15 “**GMPCS**” means Global Mobile Personal Communications by Satellite.
- 2.1.16 “**Global Navigation Satellite System (GNSS)**” describes a satellite navigation system that provides autonomous geo-spatial positioning with global coverage.
- 2.1.17 “**GSO**” means the geo-stationary orbit.
- 2.1.18 “**Harmful Interference**” means interference which impairs the functioning of a radiocommunication service or which materially degrades or obstructs or repeatedly interrupts a radiocommunication service.
- 2.1.19 “**ITU**” means International Telecommunication Union, a leading United Nations agency for information and communication technologies.

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- 2.1.20 **“ITU RR”** means the publication issued by the ITU, adopted by WRC and ratified by the UAE.
- 2.1.21 **“Low-water Mark”** means the intersection of the low-water tidal plane with the land.
- 2.1.22 **“Maritime Mobile-Satellite Service”** means a Mobile-Satellite Service in which Mobile Earth Stations are located on board ships.
- 2.1.23 **“Minimum Distance”** means the distances from Low-water Mark as specified in ITU RR Resolution 902.
- 2.1.24 **“Mobile Earth Station”** means an Earth Station in the Mobile-Satellite Service intended to be used while in motion or during halts at unspecified points.
- 2.1.25 **“MSS”** or **“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.
- 2.1.26 **“National Frequency Plan”** means radio frequency allocation plan for the UAE.
- 2.1.27 **“NGSO”** means the non-geostationary orbit of a Satellite.
- 2.1.28 **“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.
- 2.1.29 **“Satellite Network”** means a Satellite System or a part of a Satellite System consisting of one Satellite and the cooperating Earth stations.
- 2.1.30 **“Satellite System”** means a space system using one or more artificial Earth Satellites.
- 2.1.31 **“Ship Radio License”** means an Authorization issued by the TRA to permit the operation of all radio equipment on board ship necessary for communication, navigation, and surveillance purposes.
- 2.1.32 **“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.
- 2.1.33 **“UAE”** or **“State”** means the United Arab Emirates including its territorial waters and the airspace above.
- 2.1.34 **“VSAT”** means Very Small Aperture Terminal.
- 2.1.35 **“WRC”** means World Radiocommunication Conference of the ITU.

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Article (3)

Frequency Spectrum Authorizations

- 3.1 Earth Station use will be authorized for the following:
- 3.1.1 **Earth Station Authorization:** Earth Stations at fixed location (including feeder links) with antenna diameter of generally 2.4 metres and above.
 - 3.1.2 **VSAT Authorization:** Earth Stations at fixed location with antenna diameter of generally less than 2.4 metres.
 - 3.1.3 **DIGITAL SATELLITE NEWS GATHERING (DSNG) Authorization:** transportable Earth Stations with antenna diameter of generally less than 2.4 metres and associated with the broadcasting industry.
 - 3.1.4 **Class Authorization:** Certain categories as provided in Article 11 of this Regulations.
 - 3.1.5 **Authorization for other Earth Stations:** These include
 - 3.1.5.1 ESV
 - 3.1.5.2 ESIM (including ESIM-L, -M, -A)
 - 3.1.5.3 MSS terminals (including GMPCS)
- 3.2 Earth Stations installed on a vessel are authorized as part of the Ship Radio License according to technical requirements as stated in Articles 6 and 7 for ESV and 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.
- 3.3 Aircraft Earth Stations (AES) installed on an aircraft are authorized as part of the Aircraft Radio License. The frequency ranges for AES are provided in the TRA Regulations for Aeronautical Radio Systems. The technical requirements for ESIM are stated in Article 7. 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)

Regulatory Conditions and Frequency Ranges

- 4.1 An Earth Station authorized under any category or subject to Class Authorization shall be operated in accordance with the provisions of the ITU RR and these Regulations.
- 4.2 Authorized Users shall be required to conform to all conditions given within the Authorization. Where appropriate, the Authorized User may be required to implement additional installation measures to reduce the potential for causing interference to operational systems as mentioned in the Authorization.

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- 4.3 The apparatus used for transmission must comply with the relevant technical specifications and meet applicable type approval requirements for installation and operation in the UAE.
- 4.4 The apparatus shall be designed, constructed, maintained and operated in such a manner that its use does not cause any Harmful Interference.
- 4.5 The authorized apparatus shall be associated with Satellite Networks filed with the ITU Radiocommunication Bureau according to ITU procedures.
- 4.6 Authorized users must ensure that their systems (i.e. equipment with antennas) meet planning requirements and, where applicable, appropriate approvals are obtained from the Authority or other relevant government entity.
- 4.7 All Earth Stations shall comply with the coordination agreements of the Satellite Networks with which the relevant Earth Station is associated.
- 4.8 The table below provides guidance on available frequency ranges that are routinely available for different Authorization types:

Authorization Type	Available Frequency Ranges	References
Earth Station Authorization	Range of frequency bands identified for Satellite services in the National Frequency Plan.	
VSAT Authorization	<p><u>Frequency ranges in C-Band</u> 3.8 - 4.2 GHz (Space-to-Earth) 4.5 - 4.8 GHz (Space-to-Earth) 5.15 - 5.25 GHz (Earth-to-Space) 5.725 - 6.725 GHz (Earth-to-Space)</p> <p><u>Frequency ranges in Ku – Band</u> 10.7 - 11.7 GHz (Space-to-Earth) / (Earth-to-Space) 12.5 - 13.25 GHz (Space-to-Earth) / (Earth-to-Space) 13.4 -13.65 GHz (Earth-to-Space)</p> <p><u>Frequency ranges in Ka-Band</u> 19.7 - 21.2 GHz (Space-to-Earth) 27.5 – 31 GHz (Earth-to-Space)</p>	
DIGITAL SATELLITE	<u>Frequency ranges in Ku – Band</u>	

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<p>NEWS GATHERING (DSNG) Authorization</p>	<p>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) <u>Frequency ranges in Ka-Band</u> 19.7 - 21.2 GHz (Space-to-Earth) 27.5 – 31 GHz (Earth-to-Space)</p>	
<p>ESIM Authorization</p>	<p><u>Frequency ranges in Ka-band</u> 19.7-20.2 GHz (Space-to-Earth) 29.5-30.0 GHz (Earth-to-Space)</p>	<p>ITU RR Resolution 156 (WRC-15) (Use of the frequency bands 19.7 - 20.2 GHz and 29.5 - 30.0 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service) Relevant ITU RR Article 5 Footnotes Relevant Footnotes for UAE Allocations in the National Frequency Plan</p>
<p>ESV Authorization</p>	<p><u>Frequency Ranges in C-Band</u> 3.8 – 4.2 GHz (Space-to-Earth) 5.925 – 6.425 GHz (Earth-to-Space) <u>Frequency Ranges in Ku – Band</u> 10.70 – 12.75 GHz (Space-to-Earth) 14.0 – 14.50 GHz (Earth-to-Space)</p>	<p>ITU RR Resolution 902 (WRC-03) (Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the uplink bands 5925 - 6425 MHz and 14 - 14.5 GHz) Relevant ITU RR Article 5 Footnotes</p>

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		Relevant Footnotes for UAE Allocations in the National Frequency Plan
MSS terminals (including GMPCS)	<p><u>Frequency Ranges in L-Band</u></p> <p>1.518 - 1.559 GHz 1.6265 - 1.6605 GHz 1.668 - 1.675 GHz</p> <p><u>Frequency Ranges in S-Band</u></p> <p>1.980 - 2.010 GHz 2.170 – 2.200 GHz</p>	<p>ITU RR Resolution 25 (WRC-03)</p> <p>(Operation of global satellite systems for personal communications)</p> <p>Relevant ITU RR Article 5 Footnotes</p> <p>Relevant Footnotes for UAE Allocations in the National Frequency Plan</p>
ESIM-L, -M, -A ¹ Authorization	<p><u>Frequency Ranges in Ka-Band</u></p> <p>17.7 - 19.7 GHz (Space-to-Earth) 27.5 - 29.5 GHz (Earth-to-Space)</p>	<p>ITU RR Resolution 158 (WRC-15)</p> <p>(Use of the frequency bands 17.7 - 19.7 GHz (space-to-Earth) and 27.5 - 29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service)</p> <p>Relevant ITU RR Article 5 Footnotes</p> <p>Relevant Footnotes for UAE Allocations in the National Frequency Plan</p>
GNSS	<p><u>Frequency Ranges in L-Band</u></p> <p>1.559 - 1.6265 GHz</p>	

1 To be updated after WRC-19.

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- 4.9 The applications for Earth Stations Authorization will be evaluated on a case-by-case basis for the following:
- 4.9.1 Earth Station not covered in Article 3;
 - 4.9.2 Applications for frequency ranges not listed in the table above but having an Allocation in the National Frequency Plan; and
 - 4.9.3 The appropriateness of the requested Authorization category based on the antenna type and size.

Article (5)

Technical Conditions for Earth Station

- 5.1 Relevant provisions as given in ITU RR Article 21 (Terrestrial and space services sharing frequency bands above 1 GHz) and Article 22 (Space services) should be complied with. Key provisions include the following:
- 5.1.1 Earth Station power limits as given in ITU RR 21.8 to RR 21.13;
 - 5.1.2 Minimum angle of elevation of an Earth Station as given in ITU RR 21.14;
 - 5.1.3 Earth Station off-axis power limits for GSO FSS networks as given in ITU RR 22.26 to RR 22.39 for frequency ranges where these limits apply; and
 - 5.1.4 The equivalent power flux-density limitations for Earth Stations operating with NGSO Satellites as given in ITU RR Article 22.
- 5.2 The e.i.r.p. density of emissions from any GSO FSS Earth Station in the band 13.77 - 13.78 GHz as given in ITU RR 5.503 should be complied with.
- 5.3 Minimum GSO FSS Earth Station antenna diameter, power flux density and e.i.r.p. limits for the band 13.75 – 14 GHz as given in ITU RR 5.502 should be complied with.
- 5.4 A minimum diameter for NGSO FSS Earth Stations operating in the band 13.75 – 14 GHz should be 4.5 metres as given in ITU RR 5.502.
- 5.5 The minimum performance for an antenna radiation pattern should comply with the relevant ITU-R Recommendations (e.g. ITU-R S.580). The antenna pattern shall be detailed by the Applicant.
- 5.6 The Applicant must obtain, where necessary, satisfactory site clearance and terrestrial coordination from the concerned authorities for operation at the specified location prior to obtaining a spectrum Authorization from the TRA.

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Article (6)

Technical Conditions for ESV

- 6.1 The use of ESV in frequency ranges 3.8 – 4.2 GHz, 5.925 – 6.425 GHz, 10.70 – 12.75 GHz and 14.0 – 14.50 GHz shall be in accordance with ITU RR Resolution 902 (WRC-03).
- 6.2 The use of ESV on any UAE registered ship shall be allowed only if included in the Ship Radio License (Authorization). UAE registered ships may be able to use the ESV in the Territorial Waters of the UAE and the Territorial Waters of other States if the national regulations of that State allow such use.
- 6.3 The responsibility to adhere to the National regulations within the Territorial Waters of each State by UAE registered ships lies with the ship owner and/or ship operator.
- 6.4 Foreign registered vessels may be able to use the ESV in the zone between the UAE Low-water Mark and Minimum Distance if their Ship Radio License includes the ESV and adheres to the conditions as set in these Regulations.
- 6.5 The Licensing Administration or the owner of the foreign registered vessels intending to use ESV in the Minimum Distance and Territorial Waters of the UAE shall provide the Authority a point of contact.
- 6.6 In all conditions whatsoever, the ESV shall be switched OFF immediately if directed by the Authority.
- 6.7 UAE registered ships requiring ESV coordination for use in the Minimum Distance of other countries can request the support of the Authority for facilitating this coordination at the Administration level.
- 6.8 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.
- 6.9 In case of any interference reported to UAE Fixed Services or UAE Earth Stations as a result of ESV operation within the Minimum Distance, the ESV shall immediately cease its transmissions.
- 6.10 The methodology as given in ITU-R Recommendation SF.1649 may be used to assess the interference potential between ESVs and Fixed Services.

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Article (7)

Technical Conditions for ESIM

- 7.1 The use of ESIM shall be in accordance with ITU RR Resolution 156 (WRC-15).
- 7.2 The use of ESIM in frequency ranges 17.7 – 19.7 GHz (space-to-Earth) and 27.5 – 29.5 GHz (Earth-to-space) may be considered on a case-by-case basis subject to the decision of WRC-19.
- 7.3 The use of ESIM with GSO FSS Space Stations in the frequency ranges 19.7-20.2 GHz and 29.5- 30.0 GHz on UAE registered ships and aircraft must be included in the ship or aircraft's Authorization by the Authority.
- 7.4 The ESIM on land mobile platforms are authorized within the network of a licensed Satellite operator in the UAE.
- 7.5 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 RR Resolution 156.
- 7.6 The ESIM shall not claim protection or impose constraints on the development of terrestrial services operating in the frequency band 19.7-20.1 GHz.
- 7.7 Maritime ESIM operating in international waters and aeronautical ESIM operating in international airspace shall not cause Harmful Interference to any terrestrial systems operating in the frequency band 29.5-29.9 GHz.
- 7.8 The operator shall provide a point of contact for the purpose of tracing any suspected cases of interference from ESIM
- 7.9 Upon receipt of a report of Harmful Interference with respect to any terrestrial systems transmission shall be immediately ceased.
- 7.10 The ESIM shall be subject to permanent monitoring and control by a network control and monitoring centre or equivalent facility and be capable of receiving and acting upon at least "enable transmission" and "disable transmission" commands from the network control and monitoring centre.
- 7.11 The ESIM shall employ techniques to track the associated GSO FSS Satellite and shall be resistant to capturing and tracking adjacent GSO Satellites.
- 7.12 The ESIM shall not be used or relied upon for safety-of-life applications.

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Article (8)

Technical Conditions for GMPCS

- 8.1 ITU RR Resolution 25 (WRC-03) provides provisions for the operation of global Satellite Systems for personal communication.
- 8.2 ITU-R Recommendations M.1343 and M.1480 provide the essential technical requirements that should be used by Administrations as a common technical basis facilitating the global circulation and use of such GMPCS terminals in conformity with these Recommendations.

Article (9)

Technical Conditions for VSAT

- 9.1 Relevant provisions as given in ITU RR Article 21 (Terrestrial and space services sharing frequency bands above 1 GHz) and Article 22 (Space services) should be complied with. Key provisions include the following:
 - 9.1.1 Minimum angle of elevation as given in ITU RR 21.14; and
 - 9.1.2 Off-axis power limits as given in ITU RR 22.26 to RR 22.39 for frequency ranges where these limits apply.
- 9.2 The minimum performance for an antenna radiation pattern should comply with the relevant ITU-R Recommendations (e.g. ITU-R S.580). The antenna pattern shall be detailed by the Applicant.
- 9.3 Terminals which are included as part of a VSAT network Authorization shall implement independent local control and monitoring functions at the terminal, and be authorized, supervised and administered by a network control and monitoring centre.
- 9.4 An emergency contact must be identified for the network control and monitoring centre.
- 9.5 The operator shall have the facility to disable individual terminal transmission.
- 9.6 The network control and monitoring centre located within the UAE shall be authorized.
- 9.7 Site clearance of individual VSATs may be required depending on the location and radiated power. Details of the specific cases where clearance is required shall be provided to the Applicant as a condition of use within the Authorization.

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Article (10)

Technical Conditions for Digital Satellite News Gathering (DSNG)

- 10.1 Relevant provisions as given in ITU RR Article 21 (Terrestrial and space services sharing frequency bands above 1 GHz) and Article 22 (Space services) should be complied with. Key provisions include the following:
 - 10.1.1 Earth Station power limits as given in ITU RR 21.8 to RR 21.13;
 - 10.1.2 Minimum angle of elevation of an Earth Station as given in ITU RR 21.14; and
 - 10.1.3 Earth Station off-axis power limits for GSO FSS networks as given in ITU RR 22.26 to RR 22.39 for frequency ranges where these limits apply.
- 10.2 Minimum GSO FSS Earth Station antenna diameter, power flux density and e.i.r.p. limits for the band 13.75 – 14 GHz as given in ITU RR 5.502 should be complied with.
- 10.3 The minimum performance for an antenna radiation pattern should comply with the relevant ITU-R Recommendations (e.g. ITU-R S.580). The antenna pattern shall be detailed by the Applicant.
- 10.4 The Applicant shall be responsible to obtain all the necessary media production, filming and shooting permissions from the relevant authorities.
- 10.5 The Applicant shall comply with any Health and Safety Executive requirements and must ensure that the necessary local permissions from the appropriate authorities are obtained at each notified location site prior to commencing operation.
- 10.6 The apparatus shall be attended at all times during operation, and an emergency contact shall be identified for the designated site.
- 10.7 The Applicant must obtain, where necessary, satisfactory site clearance and terrestrial coordination from the concerned authorities for operation at the specified location prior to commencing operation in the UAE.

Article (11)

Class Authorization

- 11.1 VSATs, MSS terminals (including GMPCS) and ESIMs of a licensee; and TV receive-only Earth Stations and GNSS receivers can be authorized under Class Authorization for the frequency ranges given in Article 3.
- 11.2 The Authority may decide to facilitate Class Authorization for other categories of Earth Stations provided that they comply with the Class Authorization conditions defined by the Authority.

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Article (12)

Spectrum Coordination and Notification

- 12.1 Coordinating Radio Frequencies for Earth 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.
- 12.2 Notifying and Registering of Radio Frequencies in the ITU shall be made through the Authority according to the procedures outlined in the Radio Regulations and the Guidelines for Coordination of Satellite Networks.
- 12.3 The Applicant or operator shall support the coordination procedures.