
Public Consultation

TDRA Regulations – Unmanned Aerial Radio Systems

Commencement Date: 25 October 2022

Response Date: 18 November 2022

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

Preface and Notes to Potential Respondents

In keeping with its values of collaboration and commitment, the TDRA wishes to review and study the impact of regulatory instruments issued by it to keep abreast of developments to better involve all stakeholders. The TDRA strives to meet the needs of the sector and seeks the views and feedback from the sector for the revision of the regulations. The purpose of this document is to invite comments from stakeholders regarding the changes to text it proposes under the articles of the TDRA Regulations for Unmanned Aerial Radio Systems V1.0. in accordance with the Telecom Law.

Stakeholders who wish to respond to this consultation should do so in writing to the TDRA on or before the response date stated on the front cover of this document.

The comments which are contained in any response to this consultation should be clearly identified with respect to the specific question in this consultation to which such comments refer. Any comments which are of a general nature and not in response to a particular question should be clearly identified as such.

Responses to this consultation should be made in writing and provided electronically in MS Word format and Adobe PDF format, on or before the response date stated on the front cover of this document. Responses must be accompanied by the full contacts details (contact name, e-mail address and phone and fax numbers) of the respondent to:

spectrumconsultation@TDRA.gov.ae;

Executive Director Spectrum Affairs
Telecommunications and Digital Government Regulatory Authority
P.O. Box 26662
Abu Dhabi, UAE

Respondents are advised that it will be the general intention of the TDRA to publish in full the responses received to this consultation. Additionally, the TDRA may, at its discretion generate and publish a "Summary of Responses" document at the conclusion of this consultation.

Accordingly, the Summary of Responses may include references to and citations (in whole or in part) of comments which have been received. The TDRA recognizes that certain responses may include commercially sensitive and confidential information which the respondent may not wish to be published. In the event that a response contains confidential information, it shall be the responsibility of the respondent to clearly mark any information which is considered to be of a confidential nature.

In any event the respondent shall be required to submit two versions of its response to the TDRA as follows:

- A full copy of its response in MS Word format with any confidential information clearly marked. The TDRA will not publish the Word document and will only use it for internal purposes.
- A publishable copy of its response in Adobe PDF format. The TDRA will publish the PDF version in its entirety. Thus, the respondent should take care to redact any commercially sensitive and confidential information in the PDF version of its response.

By participating in this consultation and by providing a PDF version of its response the respondent expressly authorizes the TDRA to publish the submitted PDF version of its response in full.

It should be noted that none of the ideas expressed or comments made in this consultation document will necessarily result in formal decisions by the TDRA and nothing contained herein shall limit or otherwise restrict the TDRA's powers to regulate the telecommunications sector at any time.

If any Person or entity seeks to clarify or discuss any part of this Regulations can request for a meeting in writing again to the above E-mail and then TDRA will set the meetings in the period from **7 to 10 November 2022** so that formal comments can still be received by **15.00pm on 18 November 2022**.

Consultation Schedule

Milestone	Due Date	Notes
Closing Date for Initial Responses	18 November 2022	All responses to this consultation should be properly received by no later than <u>15.00 noon</u> on the closing date. Responses are to be submitted in electronic format as set out in this consultation document.
Latest date for requests for extension to the due date for Initial Responses.	11 November 2022	<p>Stakeholders wishing to secure an extension to the Closing Date for Initial Responses may apply in writing to the TDRA for such an extension. The request should set out the rationale for the request.</p> <p>Requests for extension should be submitted by e-mail to the e-mail address shown above.</p> <p>The TDRA will not consider any requests for extension which the TDRA receives after <u>15.00 noon</u> on the date stated here.</p> <p>The TDRA will consider requests to extend the Closing Date for Initial Responses and will take into account such factors as: the number of such requests received; the rationale for such requests; and the effect on the overall time-scale of the particular project in question. In the event that the TDRA extends the Closing Date for Initial Responses, the TDRA will publish the revised closing date on its website.</p>

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1 Introduction

- 1.1 The TDRA intend to revise its Regulations on Unmanned Aerial Radio Systems As such, all readers are informed that this document outlines the draft version of this Regulations in order to give this document context and to enable the TDRA to ask pertinent questions. All text in this consultation document should be read and interpreted as text and not as recording decisions of the TDRA.
- 1.2 The TDRA notes that there were recent updates in Civil Aviation Regulations (CARs) issued by the General Civil Aviation Authority (GCAA) in the UAE related to the use of these systems and with the anticipated increase in the use of Unmanned Aerial Radio Systems across the UAE and there is a need to update relevant parts of these Regulations to provide more clarity on the frequencies and associated attributes under which they can operate.
- 1.3 As such, the TDRA seeks to consider inputs of all industry stakeholders regarding these changes, which are increasingly relevant and valuable in the TDRA's exercise of its duties and legal mandates.
- 1.4 Additionally, the TDRA strives to follow the principles of Transparency, fairness and openness in dealings with customers, partners and other stakeholders and, therefore considers that it is important to take into account the views of those who have a legitimate interest in the outcomes of the TDRA's regulation.
- 1.5 In the ensuing text, significant changes are marked as follows:
- Additions are highlighted in yellow
 - Deletions are struck through and highlighted in grey

Matters for Discussion and Consultation

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 Unmanned Aircraft Radio Systems. It shall be read in conjunction with the following documents available from the **TDRA** website at www.tdra.gov.ae:
 - 1.2.1 Spectrum Allocation and Assignment Regulations
 - 1.2.2 **Frequency** Spectrum Fees Regulations
 - 1.2.3 Interference Management Regulations
 - 1.2.4 National Frequency Plan **and including** National Table of Frequency Allocation
 - 1.2.5 Earth Station Regulations
 - 1.2.6 Aeronautical Radio Systems Regulations
 - 1.2.7 Ultra Wide Band (UWB) and Short Range Devices (SRD) Regulations

Question 1: Do you have any proposed modifications/additions/suppressions to Scope of Regulations?

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 unless these Regulations expressly provide otherwise for or the context in which those terms. 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 Service”** A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate: emergency, position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.

- 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 **“Aircraft Radio License” or (“License)”** means a license given to an aircraft by the TRA to permit the operation of all radio equipment on the aircraft necessary for communication, navigation and surveillance purposes.
- 2.1.4 **“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.
- 2.1.5 **“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.
- 2.1.6 **“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 Article 6 of Federal Law by Decree No. 3 of 2003 (as amended).
- 2.1.7 **“Authorization”** means a valid frequency spectrum authorization issued by the TRA Authority and permits the use of radio frequency subject to terms and conditions as stipulated by the TRA Authority.
- 2.1.8 **“Authorized User”** means a Person that has been granted an Authorization by the TRA Authority.
- 2.1.9 **“CAR”** Civil Aviation Regulations issued by the General Civil Aviation Authority in the UAE.
- 2.1.10 **“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 Authority.
- 2.1.11 **“Control and Non-Payload Communication” or (“CNPC)”** links means radio links used for the control of unmanned aircraft systems (UAS).
- 2.1.12 **“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.
- 2.1.13 **“General Civil Aviation Authority” or (“GCAA)”** means the Civil Aviation Authority of the UAE.

- 2.1.14 **“International Mobile Telecommunication” or “(IMT)”** means Public Land Mobile (Cellular) system.
- 2.1.15 **“ITU”** means the International Telecommunication Union, a leading United Nations agency for information and communication technologies.
- 2.1.16 **“Low Power Device” or “(LPD)”** means devices that operate in the frequencies defined for Ultra Wide Band and Short Range Devices regulations issued by the TRA but which use an agreed, higher power levels.
- 2.1.17 **“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.
- 2.1.18 **“Private Mobile Radio” or “(PMR)”** are radio communications systems for terrestrial use. They consist of a network of radios which may contain one or more base stations, repeaters, vehicle mounted radio and handheld including walkie-talkie. The base station and repeaters are fixed while vehicle mounted radio and handheld are mobile.
- 2.1.19 **“Radio Regulations” or “(RR)”** means a publication issued by the ITU, adopted by the World Radiocommunication Conference and ratified by the UAE.
- 2.1.20 **“Remotely Piloted Aircraft System” or “(RPAS)”** means a remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design.
- 2.1.21 **“Short Range Device” or “(SRD)”** means fixed, mobile or portable devices for various radio applications operating with technical conditions in the latest version of TRA Regulations for Ultra Wide Band and Short Range Devices.
- 2.1.22 **“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.
- 2.1.23 **“UAE”** means the United Arab Emirates including its territorial waters and the airspace above.
- 2.1.24 **“Ultra Wide Band” or “(UWB)”** Devices mean that employ spreading of the radio energy over a very wide frequency band, with a very low power

spectral density operating with technical conditions in the latest version of TRA Regulations for Ultra Wide Band and Short Range Devices.

2.1.25 **“Unmanned Aircraft Radio Systems”** means any radio system associated with a UAS.

2.1.26 **“Unmanned Aircraft Systems” or “(UAS)”** means aircraft systems including Drones or Remotely Piloted Aircraft Systems (RPAS) that are operated with no pilot on board and tethered by a radio control link.

2.1.27 **“WRC”** means World Radiocommunication Conference of the ITU.

Question 2: Do you have any proposed modifications/additions/suppressions to Definitions?

Article (3)

Uses related to Unmanned Aircraft Radio Systems

- 3.1 An Unmanned Aircraft System (UAS) consists of the following subsystems:
 - 3.1.1 Unmanned Aircraft (UA) subsystem (i.e. the aircraft itself);
 - 3.1.2 Unmanned Aircraft Control Station (UACS) subsystem;
 - 3.1.3 Air Traffic Control (ATC) communications subsystem (not necessarily relayed through the UA);
 - 3.1.4 Sense and Avoid (S&A) subsystem;
 - 3.1.5 Payload subsystem (e.g. video camera).
- 3.2 Radio systems for Unmanned Aircraft Systems (UAS) are allowed, but not limited to the following:
 - 3.2.1 Aeronautical Mobile Service (Ground-to-Air / Air-to-Ground)
 - 3.2.2 Mobile Satellite Service (Space-to-Earth, Earth-to-Space)
- 3.3 All Authorized Users shall comply with the CAR and publications issued by the GCAA.
- 3.4 All Authorized Users shall comply with requirements specified by the Minister of Industry and Advanced Technology (MOIAT) for the products of Unmanned Aircraft Systems (UAS) and drones.
- 3.45 Any data collection process by UAS shall adhere to the data privacy and protection regulatory framework in the UAE.

Question 3: Do you have any comments on the uses indicated above?

Article (4)

Technical Conditions

4.1 The following tables give guidance on frequency ranges for Unmanned Aircraft Radio Systems, their use and applicable usage conditions. The categories of UAS and RPAS are as defined in [CAR Part IV \(Unmanned Aircraft\)](#), [CAR Part VIII Subpart 10](#) as issued by the GCAA. The GCAA may update their CAR and the latest version is the one that applies.

4.1.1 Table 1 is an extract from the Ultra Wide Band (UWB) and Short Range Device (SRD) Regulations and requires Class Authorization. It reproduces those frequencies which apply to all [categories of UAS](#), for all purposes (e.g. CNPC, telemetry and payload). It includes those frequencies dedicated to model control, as well as frequencies which can be used by any, non-specific, short range device. The [TRA Authority](#) may update the UWB and SRD Regulations and the latest version is the one that applies.

Frequency Range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Conditions of Use Reference
13.553 MHz – 13.567 MHz	Non-specific short range devices	42 dB μ A/m at 10m			EN 300 330
26.957 – 27.283 MHz	Non-specific short range devices	42 dB μ A/m at 10m or 10 mW e.r.p			EN 300 220-2 EN 300 330 (10 mW effective radiated power (e.r.p.))
26.995 MHz, 27.045 MHz, 27.095 MHz, 27.145 MHz, 27.195 MHz	Non-specific short range devices	100 mW e.r.p	$\leq 0.1 \%$	≤ 10 kHz	EN 300 220-2
26.995 MHz, 27.045 MHz, 27.095 MHz, 27.145 MHz, 27.195 MHz	Model Control	100 mW e.r.p		≤ 10 kHz	EN 300 220-2
34.995 – 35.225 MHz	Model control	100 mW e.r.p		≤ 10 kHz	EN 300 220-2 (100 mW e.r.p. 10 kHz channels)
40.66 MHz - 40.7 MHz	Non-specific short range devices	10 mW e.r.p			EN 300 220-2

¹ Duty Cycle technical details should be taken from the mentioned reference documents in the table.

Frequency Range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Conditions of Use Reference
	devices				
40.665 MHz, 40.675 MHz, 40.685 MHz, 40.695 MHz	Model control	100 mW e.r.p		≤ 10 kHz	EN 300 220-2 (100 mW e.r.p. ≤ 10 kHz channels)
72.000 – 72.250 MHz ²	Model control	10 mW e.r.p		≤ 10 kHz	EN 300 220 (10 mW e.r.p. ≤ 10 kHz channels)
138.2 – 138.45 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.1 %		EN 300 220-2 (≤ 10 mW e.r.p.)
169.4 MHz - 169.4875 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.1 %		EN 300 220-2
169.4875 MHz - 169.5875 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.001% (06h00 - 24h00) ≤ 0.1% (00h00 - 06h00)		EN 300 220-2
169.5875 MHz - 169.8125 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.1 %		EN 300 220-2
433.05 – 434.79 MHz	Non-specific short range devices	10 mW e.r.p	≤ 10 %		EN 300 220-2 (1 mW e.r.p. or 10 mW e.r.p. with ≤ 10% duty cycle)
433.05 MHz - 434.79 MHz	Non-specific short range devices	1 mW e.r.p -13 dBm/10 kHz power spectral density for bandwidth modulation larger than 250 kHz			EN 300 220-2

² New approvals for model control applications using 72 MHz – 72.25 MHz will not be granted from 1 January 2021, existing class authorizations for model control applications using 72 MHz – 72.25 MHz can be renewed.

Frequency Range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Conditions of Use Reference
863 - 870 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 % or LBT + AFA		EN 300 220 (25 mW e.r.p. ≤ 0.1% duty cycle or LBT, ≤ 100 kHz channels)
865 MHz - 868 MHz	Non-specific short range devices	25 mW e.r.p	≤ 1 % or LBT +AFA	≤ 300 kHz	EN 300 220-2
868 MHz-868.6 MHz	Non-specific short range devices	25 mW e.r.p	≤ 1% or LBT +AFA		EN 300 220-2
869.4 MHz - 869.65 MHz	Non-specific short range devices	500 mW e.r.p	≤ 10% or LBT +AFA		EN 300 220-2
870 MHz - 875.8 MHz	Non-specific short range devices	25 mW e.r.p	≤ 1 %	≤ 600 kHz	EN 300 220-2
875.8 MHz - 876 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 %	≤ 200 kHz	EN 300 220-2
915 MHz - 915.2 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 %	≤ 200 kHz	EN 300 220-2
915.2 MHz – 920.8 MHz	Non-specific short range devices	25 mW e.r.p. except for the 4 channels identified in note where 100 mW e.r.p. applies ³	≤ 1%	≤ 600 kHz except for the 4 channels identified in note where # 400 kHz applies	EN 300 220-2
870.0 – 875.4 MHz	Non-specific				EN 300 220 (10 mW e.r.p. or 25 mW e.r.p. ≤ 1% duty cycle, ≤ 600 kHz channels)
920.8 MHz – 921 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 %	≤ 200 kHz	EN 300 220-2

³ The available channel centre frequencies are 916.3 MHz, 917.5 MHz, 918.7 MHz and 919.9 MHz, the channel bandwidth is 400 kHz

Frequency Range	Usage	Transmit power / Magnetic field	Duty cycle1	Channel spacing	Conditions of UseReference
2400 – 2483.5 MHz	Non-specific short range devices	10 mW e.i.r.p			EN 300 440 (10 mW effective isotropic radiated power (e.i.r.p.))
5725 – 5875 MHz	Non-specific short range devices	25 mW e.i.r.p			EN 300 440 (50 mW e.i.r.p.)
13.4 – 14 GHz	Non-specific				EN 300 440 (25 mW e.i.r.p.)
17.1 – 17.3 GHz	Non-specific				EN 300 440 (100 mW e.i.r.p.)
24 GHz - 24.25 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 300 440
57 – 64 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 305 550 (100 mW e.i.r.p.)
122 – 123 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 305 550 (100 mW e.i.r.p.)
244 – 246 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 305 550 (100 mW e.i.r.p.)

TABLE 1: Frequencies available to all UAS categories for which the equipment require Class Authorization

4.1.2 Table 2 below lists those frequencies which apply only to category 1B, 2 and 3 UAS for which the equipment will need an Authorization from the TRA Authority and will be treated as a Low Power Device as per the Frequency Spectrum Fees Regulations.

Frequency Range	Usage	Conditions of Use
26.957 – 27.283 MHz	Model control (airborne only)	100 mW e.r.p.
433.05 – 434.79 MHz	Model control (airborne only)	100 mW e.r.p.
863 – 870 MHz	Model control (airborne only)	50 mW e.r.p.

Frequency Range	Usage	Conditions of Use
870.0 – 875.4 MHz	Model control (airborne only)	50 mW e.r.p.
2400 – 2483.5 MHz	Model control (airborne only)	100 mW e.i.r.p.
5030 – 5091 MHz	CNPC	ITU Radio Regulations Chapter II, Article 5, footnotes 5.443C and 5.443D As Authorized
5725 – 5875 MHz	Model control (airborne only)	100 mW e.i.r.p.
10.95 – 11.2 GHz	CNPC (Space to Earth)	ITU Resolution 155 (WRC-15) As Authorized
11.45 – 11.7 GHz		
12.5 – 12.75 GHz		
14.0 – 14.5 GHz	CNPC (Earth to Space)	Resolution 155 (WRC-15) As Authorized
19.7 – 20.2 GHz	CNPC (Space to Earth)	ITU Resolution 156 (WRC-15) As Authorized
29.5 – 30.0 GHz	CNPC (Earth to Space)	ITU Resolution 156 (WRC-15) As Authorized

TABLE 2: Frequencies available to UAS for which the equipment require an Authorization categories 1B, 2 and 3

4.1.3 UAS related equipment using frequencies listed in Table 2 above will be treated as a Low Power Device as per the Frequency Spectrum Fees Regulations.

4.1.4 For Category 1B, 2 and 3 the frequencies UAS equipment for which the power levels or frequency range are outside those permitted in Table 2 above, the TRA Authority may consider the application on a case-by-case basis as Private Mobile Radio (Ground-to-Air).

4.1.4 Table 3 below lists those frequencies which apply to category 3 UAS only, and for which the equipment will need an Authorization from the TRA.

Frequency Range	Usage	Conditions of Use
5030 – 5091 MHz	CNPC	ITU Radio Regulations Chapter II, Article 5, footnotes 5.443C and 5.443D As Authorized
10.95 – 11.2 GHz	CNPC (Space to Earth)	ITU Resolution 155 (WRC-15) As Authorized
11.45 – 11.7 GHz		
12.5 – 12.75 GHz		

Frequency Range	Usage	Conditions of Use
14.0 – 14.5 GHz	CNPC (Earth to Space)	Resolution 155 (WRC-15) As Authorized
19.7 – 20.2 GHz	CNPC (Space to Earth)	ITU Resolution 156 (WRC-15) As Authorized
29.5 – 30.0 GHz	CNPC (Earth to Space)	ITU Resolution 156 (WRC-15) As Authorized

TABLE 3: Frequencies available to category 3 UAS only

- 4.2 In addition to the above, UAS may also operate on IMT networks using service provided by authorized operators in the UAE.
- 4.3 UAS operating in controlled airspace may also need an Aircraft Radio License provided by the **TRA Authority**. In this case, the Aeronautical Radio Systems regulations apply.

Question 4: Do you agree with the above frequency bands and usage restrictions? Do you have any proposed modifications/additions/suppressions to these frequency bands or usage restrictions?

Article (5)

Spectrum Coordination and Notification

- 5.1 Coordination of radio frequencies for the 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 of these stations 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.

Question 5: Do you have any comments on coordination/notification indicated above?

3. General comments

- 3.1 Further to the specific matters discussed, and questions asked above, please identify any additional issues which you feel are relevant for consideration in this consultation. Please provide specific support and/or explanation of your viewpoints as well as recommendations regarding how such issues might be resolved.