
Public Consultation

TRA Regulations – Ultra-Wide Band and Short Range Devices

Commencement Date: 13 August 2020

Response Date: 17 September 2020

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Preface and Notes to Potential Respondents

In keeping with its values of transparency and sector engagement, the TRA wishes to review and study the impact of regulatory instruments issued by it to keep abreast of developments to better involve all stakeholders. The TRA 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 TRA's intention to revise TRA Regulations on Ultra-Wide Band and Short Range Devices version 3.0 in accordance with the Telecom Law.

Stakeholders who wish to respond to this consultation should do so in writing to the TRA 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@tra.gov.ae;

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

Respondents are advised that it will be the general intention of the TRA to publish in full the responses received to this consultation. Additionally, the TRA 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 TRA 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.

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

A full copy of its response in MS Word format with any confidential information clearly marked. The TRA 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 TRA 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 TRA 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 TRA and nothing contained herein shall limit or otherwise restrict the TRA's powers to regulate the telecommunications sector at any time.

If any person or entity seeks to clarify or discuss any part of these Regulations can request for a meeting in writing again to the above E-mail and then TRA will set the meetings in the period from 06 to 07 September 2020 so that formal comments can still be received by 15.00 noon on 17 September 2020.

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Consultation Schedule

Milestone	Due Date	Notes
Closing Date for Initial Responses	17 September 2020	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.	10 September 2020	<p>Stakeholders wishing to secure an extension to the Closing Date for Initial Responses may apply in writing to the TRA 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 TRA will not consider any requests for extension which the TRA receives after <u>15.00 noon</u> on the date stated here.</p> <p>The TRA 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 TRA extends the Closing Date for Initial Responses, the TRA will publish the revised closing date on its website.</p>

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1. Introduction

- 1.1 The TRA intend to revise its Regulations on Ultra-Wide Band and Short Range Devices version 3.0. As such, all readers are informed that this document outlines the draft version of these regulations in order to give this document context and to enable the TRA to ask pertinent questions. All text in this consultation document should be read and interpreted as text and not as recording decisions of the TRA.
- 1.2 The TRA notes that there were recent updates in difference references standards from ETSI and ITU-R recommendations related to these devices and with the anticipated increase in the use of UWB and SRDs 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 TRA seeks to consider inputs of all industry stakeholders regarding these changes, which are increasingly relevant and valuable in the TRA's exercise of its duties and legal mandates.
- 1.4 Additionally, the TRA 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 TRA'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

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2. 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 These regulations comprise regulatory **provisions and technical** conditions for the authorization and use of Ultra-Wide Band and Short Range Devices under Class Authorization for various applications. 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:
 - 1.1.1 Spectrum Allocation and Assignment Regulations
 - 1.1.2 Spectrum Fees Regulations
 - 1.1.3 Interference Management Regulations
 - 1.1.4 National Frequency Plan including National Table of Frequency Allocation
 - 1.1.5 Services Ancillary to Broadcast Production, Program Making & Special Events (PMSE) **Regulations**
 - 1.1.6 **Unmanned Aircraft Radio Systems (UAS) Regulations**

Question 1: Do you have any comments concerning the Scope of the Document?

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 “**AFA**” means Adaptive Frequency Agility.
 - 2.1.2 “**APC**” means Automatic or Adaptive Power Control.
 - 2.1.3 “**Authorization**” or “**Frequency Spectrum Authorization**” means a valid frequency spectrum authorization issued by the TRA and permits

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the use of radio frequency subject to terms and conditions as stipulated by the TRA.

- 2.1.4 “**Authority**” or “**TRA**” means the General Authority for Regulating the Telecommunication Sector of the UAE 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).
- 2.1.5 “**Broadband Radio Access Networks**” means networks using equipment complying with technical specifications as set out in ETIS EN 301 893 and ETSI EN302 567. This includes equipment based on IEEE 802.11 family of standards.
- 2.1.6 “**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.
- 2.1.7 “**Cordless Telephony**” includes cordless telephones; cordless telecommunication systems and the cordless systems providing communications within the Curtilage of any premises.
- 2.1.8 “**Curtilage**” means a partially or entirely enclosed area such as a courtyard, atrium, close, compound, court, enclosure, quadrangle, square, patio or yard.
- 2.1.9 “**DAA**” means Detect And Avoid.
- 2.1.10 “**DFS**” means Dynamic Frequency Selection.
- 2.1.11 “**DECT**” means Digital Enhanced Cordless Telecommunications in accordance with applicable European Telecommunications Standards Institute (ETSI) standards.
- 2.1.12 “**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.
- 2.1.13 “**FHSS**” means Frequency Hopping Spread Spectrum which is a spread spectrum technique in which the transmitter signal occupies a number of frequencies in time, each for some period of time.
- 2.1.14 “**IEEE**” means the Institute of Electrical and Electronics Engineers.
- 2.1.15 “**ITU**” means the International Telecommunication Union, a leading United Nations agency for information and communication technologies.
- 2.1.16 “**LBT**” means Listen Before Talk which is a mechanism by which an equipment applies clear channel assessment before using the channel.
- 2.1.17 “**Person**” will include ‘juridical entities’ as well as ‘natural persons’.

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- 2.1.18 “**PMR 446**” means Private Mobile Radio 466 which is a land mobile radio (i.e. walkie talkie) that operate in the 466 MHz frequency range with technical characteristics as specified in the regulation on Ultra-Wide Band and Short Range Devices for this frequency range.
- 2.1.19 “**PMR over WLAN**” means Private Mobile Radio over Wireless Local Area Networks which is a land mobile radio (i.e. walkie talkie) and base stations (access points) operating in the 2.4 GHz and 5 GHz frequency range based on IEEE 802.11 family of standards ~~radio standard IEEE 802.11 a/b/g/n.~~
- 2.1.20 “**PMSE**” means Programme Making and Special Events, i.e. those uses of the radio spectrum which support the production of content and for certain special events.
- 2.1.21 “**RFID**” means Radio Frequency Identification which is a system that enables data to be transmitted by a transponder (tag) via radio signals which are received by an RFID interrogator and processed according to the needs of a particular application.
- 2.1.22 “**RLAN**” means Radio Local Area Network which is a network with equipment complying with technical specifications as set out in ETSI EN 301 893 and ETSI EN302 567. This includes equipment based on IEEE 802.11 family of standards.
- 2.1.23 “**Short Range Device**” or “**SRD**” means fixed, mobile or portable devices for various radio applications operating with technical conditions as defined in Article 4.
- 2.1.24 “**TPC**” means Transmit Power Control which is a technique in which the transmitter output power is controlled resulting in reduced interference to other systems.
- 2.1.25 “**UAE**” or “**State**” means the United Arab Emirates including its territorial waters and the airspace above.
- 2.1.26 “**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 as defined in Article 4.
- 2.1.27 “**Wideband Data Transmission**” equipment means equipment complying with technical specifications as set out in ~~ETIS~~ ETSI EN 300 328. This includes equipment based on IEEE 802.11 family of standards.
- 2.1.28 “**WLAN**” means Wireless Local Area Network of connected equipment connected without the use of wires using IEEE 802.11 family of standards.
- 2.1.XX “**Heritage Recreation and Hobbies**” means activities which are closely linked to traditions and heritage of the UAE such as (Camel

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racing, hunting, falconry, etc) or personal hobbies and activities such as (off-roading, scuba diving, motor biking, cycling, etc)

2.1.XX “ITS” or “Intelligent Transport Systems” means the integration of information and communication technologies (ICTs) and applications that can achieve a reduction in traffic and pedestrian fatalities, and enhance transport infrastructure systems, through the realization of future automated driving.

Question 2: Do you have any comments regarding the definitions, or any other suggestions for modifications, additions or updates?

Article (3)

Uses related to UWB and SRD

- 3.1 The following Wireless Equipment are covered by this regulation:
 - 3.1.1 Ultra-Wide Band (UWB)
 - 3.1.2 Short Range Devices (SRD)
- 3.2 For the usage of Ultra-Wide Band and Short Range Devices the following conditions apply
 - 3.2.1 The usage is allowed under Class Authorization.
 - 3.2.2 The usage is allowed on a non-interference and non-protection basis.

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

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Article (4)

Technical Conditions

4.1. The technical conditions as given in these regulations shall apply on the use of SRD. The following table gives guidance on available frequency ranges and major usage conditions:

Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
9 kHz – 59.75 kHz	Inductive applications	72 dBµA/m at 10m			EN 300 330
59.75 kHz – 60.25 kHz	Inductive applications	42 72 dBµA/m at 10m			EN 300 330
60.25 kHz - 90 kHz	Inductive applications	72 dBµA/m at 10m			EN 300 330
9 kHz - 315 kHz	Active Medical Implants and their associated peripherals	30 dBµA/m at 10m	≤ 10 %		EN 302 195
90 kHz - 140 kHz	Inductive applications	42 dBµA/m at 10m			EN 300 330
140 kHz - 148.5 kHz	Inductive applications	37.7 dBµA/m at 10m			EN 300 330
148.5 kHz - 5000 kHz	Inductive applications	-15 5 dBµA/m at 10 m			EN 300 330
315 kHz- 600 kHz	Active Medical Implants and their associated peripherals	-5 dBµA/m at 10m	≤ 10 %		EN 302 536
400 kHz - 600 kHz	Inductive applications	-8 5 dBµA/m at 10 m			EN 300 330
456.9 kHz - 457.1 kHz	Tracking, tracing and data acquisition	7 dBµA/m at 10 m		No modulation allowed	EN 300 718
984 kHz – 7484 kHz	Railway applications	9 dBµA/m at 10m	≤ 1.0 %		EN 302 608
3155 kHz - 3400 kHz	Inductive applications	13.5 dBµA/m at 10m			EN 300 330
5000 kHz - 30 MHz	Inductive applications	-20 5 dBµA/m at 10 m			EN 300 330
6765 kHz - 6795 kHz	Non-specific short range devices/ Inductive applications	42 dBµA/m at 10m			EN 300 330
7300 kHz – 23000 kHz	Railway applications	-7 dBµA/m at 10m			EN 302 609
7400 kHz - 8800 kHz	Inductive applications	9 dBµA/m at 10m			EN 300 330
10200 kHz - 11000 kHz	Inductive applications	9 dBµA/m at 10m			EN 300 330
11810 kHz - 12660 kHz	Inductive applications	-16 dBµA/m at 10m			EN 300 330
12500 kHz - 20000 kHz	Active Medical Implants and their associated peripherals	-7 dBµA/m at 10m	≤ 10 %		EN 300 330
13553 kHz - 13567 kHz	Non-specific short range devices	42 dBµA/m at 10m			EN 300 330
	RFID and EAS	60 dBµA/m at 10m			EN 300 330
13567 kHz - 13660 kHz	Inductive applications	27 dBµA/m at 10m			EN 300 330
13660 kHz - 13710 kHz	Inductive applications	9 dBµA/m at 10m			EN 300 330

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

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Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
13710 kHz - 14010 kHz	Inductive applications	-3.5 dBμA/m at 10m			EN 300 330
14010 kHz - 14460 kHz	Inductive applications	-10 dBμA/m at 10m			EN 300 330
14460 kHz - 15310 kHz	Inductive applications	-16 dBμA/m at 10m			EN 300 330
26957 kHz - 27283 kHz	Non-specific short range devices	42 dBμA/m at 10m 10 mW e.r.p			EN 300 330
26995, 27045, 27095, 27145, 27195 kHz	Non-specific short range devices	100 mW e.r.p	≤ 0.1 %	≤ 10 kHz	EN 300 220
29.7 MHz - 47.0 MHz	Radio microphone applications	10 mW e.r.p		≤ 50 kHz	EN 300 422
30 MHz - 37.5 MHz	Active Medical Implants and their associated peripherals	1 mW e.r.p	≤ 10 %		EN 302 510
34.995 MHz - 35.225 MHz	Model control	100 mW e.r.p		10 kHz	EN 300 220
40.66 MHz - 40.7 MHz	Non-specific short range devices	10 mW e.r.p			EN 300 220
40.665, 40.675, 40.685, 40.695 MHz	Model control	100 mW e.r.p		≤ 10 kHz	EN 300 220
72 MHz - 72.25 MHz	Model control	10 mW e.r.p		≤ 10 kHz	EN 300 220
87.5 MHz - 108 MHz	Wireless audio applications	50 nW e.r.p		≤ 200 kHz	EN 301 357
138.2 MHz - 138.45 MHz	Non-specific short range devices	≤ 10 mW e.r.p			EN 300 220
169.4 MHz - 169.475 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.1 %		EN 300 220
	Tracking, tracing and data acquisition	500 mW e.r.p	≤ 10 %	≤ 50 kHz	EN 300 220
	Aids for the hearing impaired	500 mW e.r.p	≤ 10 %	≤ 50 kHz	EN 300 422
169.475 MHz - 169.4875 MHz	Non-specific	10 mW e.r.p	≤ 0.1 %		EN 300 220
	Aids for the hearing impaired	10 mW e.r.p		≤ 50 kHz	EN 300 422
169.4875 MHz - 169.5875 MHz	Non specific short range devices	10 mW e.r.p	≤ 0.001% (06h00 - 24h00) ≤ 0.1% (00h00 - 06h00)	Non-specific	EN 300 220
	Aids for the hearing impaired	500 mW e.r.p		≤ 50 kHz	EN 300 422
169.5875 MHz - 169.8125 MHz	Non-specific short range devices	10 mW e.r.p	≤ 0.1 %		EN 300 220
	Aids for the hearing impaired	10 mW e.r.p		≤ 50 kHz	EN 300 422
169.4 MHz - 174 MHz	Aids for the hearing impaired	10 mW e.r.p		≤ 50 kHz	EN 300 422
312 MHz - 315 MHz	Keyless car entry	50 mW e.r.p			EN 300 220

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Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
401 MHz - 402 MHz	Active Medical Implants and their associated peripherals	25 uW e.r.p		≤ 100 kHz	EN 302 537
402 MHz – 405 MHz	Active Medical Implants and their associated peripherals	25 uW e.r.p		≤ 300 kHz	EN 301 839
405 MHz - 406 MHz	Active Medical Implants and their associated peripherals	25 uW e.r.p		≤ 100 kHz	EN 302 537
433.05 MHz - 434.79 MHz	Non-specific short range devices	1 mW e.r.p			EN 300 220
	Non-specific short range devices	10 mW e.r.p	≤ 10 %		EN 300 220
	LPD 433	10 mW e.r.p		25 kHz	EN 300 220
446 MHz - 446.2 MHz	PMR 446	500 mW			TS 102 490
823 MHz – 826 MHz	Radio microphones and IEM	Maximum 20 mW e.i.r.p.			
826 MHz – 832 MHz	Radio microphones and IEM	Maximum 100 mW e.i.r.p.			
863 MHz – 870 MHz	Radio microphones and IEM	Maximum 50 mW e.i.r.p.			
863 MHz - 870 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 % or LBT		EN 300 220
	SRD860	10 mW e.r.p		25 kHz	
865 MHz – 868 MHz	Tracking, tracing & data acquisition	500 mW e.r.p. Transmissions only permitted within the bands: 865,6- 865,8 MHz, 866,2-866,4 MHz, 866,8-867,0 MHz and 867,4- 867,6 MHz. and APC	≤ 10 % for network access points ≤ 2,5 % otherwise	≤ 200 kHz	EN 303 204
868.7 MHz – 869.2 MHz	Automatic Meter Reading	25 mW e.r.p			EN 300 220
869.4 MHz - 869.65 MHz	Non-specific short range devices	500 mW e.r.p	≤ 10% or LBT +AFA	≤ 25 kHz. ²	EN 300 220
865 MHz - 865.6 MHz	RFID	100 mW e.r.p		≤ 200 kHz	EN 302 208
865.6 MHz - 867.6 MHz	RFID	2 W e.r.p		≤ 200 kHz	EN 302 208
867.6 MHz - 868 MHz	RFID	500 mW e.r.p		≤ 200 kHz	EN 302 208
868 MHz-868.6 MHz	Non-specific short range devices	25 mW e.r.p	≤ 1% or LBT +AFA		EN 300 220
870 MHz - 875.4 MHz	Non-specific short range devices	10 mW e.r.p			EN 300 220

² The completely stated frequency band may be used as one wideband channel for high-speed data transmission.

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Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
870 MHz - 875.8 MHz	Non-specific short range devices	25 mW e.r.p	≤ 1 %	≤ 600 kHz	EN 300 220
870 MHz - 876 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 %	≤ 200 kHz	EN 300 220
870 MHz - 875.6 MHz	Tracking, tracing and data acquisition	500 mW e.r.p and APC	≤ 10 % for network access points ≤ 2.5 % otherwise	≤ 200 kHz	EN 303 204
870 MHz - 875.8 MHz	Transport and traffic telematics	500 mW e.r.p (vehicle to vehicle) 100 mW e.r.p. (in vehicle application)	≤ 0.1 %	≤ 500 kHz	EN 300 200
915 MHz - 921 MHz	Non-specific short range devices	25 mW e.r.p	≤ 0.1 %	≤ 200 kHz	EN 300 220
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
915 MHz - 921 MHz	RFID	4 W e.r.p		≤ 400 kHz	EN 302 208
1785 MHz - 1804.8 MHz	Radio microphone applications and IEM	50 mW e.i.r.p			EN 300 422
1795 MHz - 1800 MHz	Wireless audio applications	20 mW e.i.r.p			EN 301 357
1880 MHz - 1900 MHz	DECT applications including Cordless Telephony Radio microphones Using DECT technology only	250 mW e.i.r.p			ITU-R M.1033-1 EN 300 175
2400 MHz – 2483.5 MHz	Wideband Data Transmission (e.g. WLAN, PMR over WLAN)	100 mW e.i.r.p.			EN 300 328
	Non specific short range devices	10 mW e.i.r.p			EN 300 440
	Radiodetermination applications	25 mW e.i.r.p			EN 300 440
2446 MHz - 2454 MHz	RFID	500 mW e.i.r.p			EN 300 761 EN 300 440
	RFID	4 W e.i.r.p	≤ 15% + FHSS		EN 300 440

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

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Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
2483.5 MHz – 2500 MHz	Active Medical Implants	10 dBm e.i.r.p			EN 301 559
4500 MHz - 7000 MHz	Tank level probing radar	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure			EN 302 372
5150 MHz - 5875 MHz	Indoor conference systems.	160 mW e.i.r.p			
5150 MHz - 5250 MHz	Broadband Radio Access Networks (e.g. RLAN).	100 mW e.i.r.p without TPC 200 mW e.i.r.p with TPC			EN 301 893 TPC: EN 301 893
5250 MHz - 5350 MHz	Broadband Radio Access Networks (e.g. RLAN).	100 mW e.i.r.p without TPC 200 mW e.i.r.p with TPC			EN 301 893 TPC/DFS: EN 301 893 (Table D.1)
5470 MHz - 5725 MHz	Broadband Radio Access Networks (e.g. RLAN)	500 mW e.i.r.p without TPC 1W e.i.r.p with TPC and DFS ⁴			EN 301 893 TPC/DFS: EN 301 893 (Table D.1)
5725 MHz – 5875 MHz	Wireless Access Systems	2W e.i.r.p (10 MHz channel) 4W e.i.r.p (20 MHz channel)			EN 302 502
5725 MHz - 5875 MHz	Non-specific short range devices	50 mW e.i.r.p			EN 300 440
	Tracking, tracing and data acquisition	400 mW e.i.r.p		≥ 1 MHz and ≤ 20 MHz	EN 303 258
5795 MHz – 5815 MHz	Transport and traffic telematics	2W e.i.r.p			EN 300 674
8500 MHz - 10.6 GHz	Tank level probing radar	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure			EN 302 372
9200 MHz - 9975 MHz	Radiodetermination applications	25 mW e.i.r.p			EN 300 440
10.5 GHz - 10.6 GHz	Radiodetermination applications	500 mW e.i.r.p			EN 300 440
13.4 GHz - 14 GHz	Non-specific short range devices	25 mW e.i.r.p			EN 300 440
17.1 GHz - 17.3 GHz	Non-specific short range devices	100 mW e.i.r.p.			EN 300 440
	Radiodetermination applications	400 mW (26 dBm) e.i.r.p			EN 300 440

⁴ Slave devices without a Radar Interference Detection shall comply with the limits for the Band 5150MHz-5250

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Frequency range	Usage	Transmit power / Magnetic field	Duty cycle ¹	Channel spacing	Reference
24 GHz - 24.25 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 300 440
	Automotive radars.⁵	100 mW e.i.r.p			EN 302 858
24.05 GHz - 27 GHz	Tank level probing radar	20W (43 dBm) e.i.r.p.			EN 302 372
57 GHz - 64 GHz	Non-specific short range devices	100 mW e.i.r.p; 13 dBm/MHz e.i.r.p.			EN 305 550
	Tank level probing radar	20W (43 dBm) e.i.r.p. 400 mW (26 dBm) e.i.r.p			EN 302 372
57 GHz - 66 GHz	Broadband Radio Access Networks (e.g. RLAN)	10 W (40 dBm) e.i.r.p	Spectrum sharing mechanism (e.g. LBT, DAA)		EN 302 567
75 GHz - 85 GHz	Tank level probing radar	-41.3 dBm/MHz e.i.r.p.			EN 302 372
	Radiodetermination applications	400-2500 mW (26-34 dBm, measured in 50 MHz) e.i.r.p			EN 302 729
76 GHz - 77 GHz	Railway applications and Transport and traffic telematics short-range radar for ground-based applications, including automotive radars.	55 dBm e.i.r.p peak			EN 301 091 ITU-R M.2057
77 - 81 GHz	short-range radar for ground-based applications, including automotive radars.	55 dBm e.i.r.p peak			EN 302 264
122 GHz - 123 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 305 550
244 GHz - 246 GHz	Non-specific short range devices	100 mW e.i.r.p			EN 305 550

Table 1: guidance on available frequency ranges and major usage conditions on the use of UWB and SRD

⁵ Only valid for existing systems before 1 January 2019.

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4.1.1 The technical conditions as given in these regulations shall apply on the use of frequencies for ITS and RSTT networks and equipment. The following table gives guidance on available frequency ranges and major usage conditions:

Table 2: guidance on available frequency ranges and major usage conditions on the use of

Frequency range	Usage	Transmit power / Magnetic field	Duty cycle⁶	Channel spacing	Reference
984 kHz - 7484 kHz	Railway applications	9 dBμA/m at 10m	≤ 1.0 %		EN 302 608 ERC 70-03
7300 kHz - 23000 kHz	Railway applications	-7 dBμA/m at 10m			EN 302 609 ERC 70-03
26957 kHz - 27283 kHz	Non-specific short range devices	42 dBμA/m at 10 m			ERC 70-03
869-871 MHz	RFID ETC (Electronic Toll Collection)				Report ITU-R M.2445
870 MHz - 875.8 MHz	Transport and traffic telematics	500 mW e.i.r.p (vehicle to vehicle) 100 mW e.i.r.p. (in vehicle application)	≤ 0.1 %	≤ 500 kHz	EN 300 220
5795 MHz - 5815 MHz	Transport and traffic telematics	2 W e.i.r.p for active and 8 W e.i.r.p. for passive systems			EN 300 674 ERC 70-03
5 855-5 925 MHz	Intelligent Transport Systems (ITS)	2 W e.i.r.p. for active and 8 W e.i.r.p. for passive systems			ITU-R M.2121
76 GHz - 77 GHz	Railway applications and Transport and traffic telematics short-range radar for ground-based applications, including automotive radars.	55 dBm e.i.r.p peak			EN 301 091 ITU-R M.2057 ERC 70-03
77 – 81 GHz	short-range radar for ground-based applications, including automotive radars.	55 dBm e.i.r.p peak			EN 302 264

frequencies for ITS and RSTT networks and equipment

NOTE1: Use of frequency band 24 GHz - 24.25 GHz for Automotive radars is only valid for existing systems before 1 January 2019.

⁶ Duty Cycle technical details should be taken from the mentioned reference documents in the table

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Question 4: Do you agree with the above frequency bands and usage restrictions to be applied on the use of frequencies for uses indicated?

Do you have any proposed modifications/additions/suppressions to these frequency bands or usage restrictions in the above Table 1 and Table 2?

Question 5: Do you think that there should be a specific modification related to RLAN/WLAN uses based on the recent developments of relate standards (e.g. IEEE 802.11 family of standards)?

Kindly provide details on proposed uses and related technical conditions.

Question 6: In your opinion, what are the other uses of frequencies for wireless equipment related to different activities such as Heritage Recreation and Hobbies that can be added?

Kindly provide details on those uses such as:

- Activity Name and nature.
- Wireless equipment used in the activity with brand, model and vendors/suppliers.
- Purpose of the wireless equipment such as safety, data feed/control, voice communication, video, ...etc.
- Area of usage such as dessert, within cities, open sea, sky, ...etc.
- Technical characteristics and usage restrictions to these uses?

4.2 Generic UWB devices shall comply with EN 302 065 -1.

4.2.1 The maximum value of mean power spectral density shall not exceed the values as given in the following table:

Frequency range [GHz]	Without mitigation techniques EIRP [dBm/MHz]	With mitigation techniques EIRP [dBm/MHz]
$f \leq 1.6$	-90	-90
$1.6 < f \leq 2.7$	-85	-85
$2.7 < f \leq 3.1$	-70	-70
$3.1 < f \leq 3.4$	-70	-41.3 (notes 1+2)
$3.4 < f \leq 3.8$	-80	-41.3 (notes 1+2)

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$3.8 < f \leq 4.2$	-70	-41.3 (notes 1+2)
$4.2 < f \leq 4.8$	-70	-41.3 (notes 1+2)
$4.8 < f \leq 6.0$	-70	-70
$6.0 < f \leq 8.5$	-41.3	-41.3
$8.5 < f \leq 10$	-65	-41.3 (note 2)
$0 < f \leq 10.6$	-65	-65
$f > 10.6$	-85	-85

NOTE 1: Within the band 3.1 GHz to 48 GHz, devices implementing Low Duty Cycle (LDC) mitigation technique TS 102 754 and CEPT report 45 are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined in 50 MHz.

NOTE 2: Within the bands 3.1 GHz to 4.8 GHz and 8.5 GHz to 9 GHz, devices implementing Detect And Avoid (DAA) mitigation technique TS 102 754 and CEPT report 45 are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined.

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4.2.2 Generic UWB devices shall not exceed the maximum peak power limits as given in the table below:

Frequency range [GHz]	Without mitigation techniques defined in 50 MHz EIRP [dBm]	With mitigation techniques defined in 50 MHz EIRP [dBm]
$f \leq 1.6$	-50	-50
$1.6 < f \leq 2.7$	-45	-45
$2.7 < f \leq 3.1$	-45	-45
$3.1 < f \leq 3.4$	-36	0 (notes 1+2)
$3.4 < f \leq 3.8$	-40	0 (notes 1+2)
$3.8 < f \leq 4.2$	-30	0 (notes 1+2)
$4.2 < f \leq 4.8$	-30	0 (notes 1+2)
$4.8 < f \leq 6.0$	-30	-30
$6.0 < f \leq 8.5$	0	0
$8.5 < f \leq 9$	-25	0 (notes 2)
$9 < f \leq 10.6$	-25	-25
$f > 10.6$	-45	-45

NOTE 1: Within the band 3.1 GHz to 4.8 GHz, devices implementing Low Duty Cycle (LDC) mitigation technique TS 102 754 and CEPT report 45 are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined in 50 MHz.

NOTE 2: Within the bands 3.1 GHz to 4.8 GHz and 8,5 GHz to 9 GHz, devices implementing Detect And Avoid (DAA) mitigation technique TS 102 754 and CEPT report 45 are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined in 50 MHz

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4.3 UWB devices for location tracking shall comply with EN 302 500-1.

4.3.1 The maximum mean EIRP spectral density shall not exceed the values as given in the following table:

Frequency range [GHz]	Maximum mean EIRP spectral density [dBm/MHz]
$f \leq 1.6$	-90
$1.6 < f \leq 2.7$	-85
$2.7 < f \leq 3.4$	-70
$3.4 < f \leq 3.8$	-80
$3.8 < f \leq 4.8$	-70
$4.8 < f \leq 6.0$	-70
$6.0 < f \leq 8.5$	-41.3
$8.5 < f \leq 9$	-41.3 (see note)
$9 < f \leq 10.6$	-65
$f > 10.6$	-85

NOTE: Operation is subject to the implementation of DAA. If DAA is not implemented, the following applies: 8.5 GHz to 9 GHz \leq -65 dBm/MHz.

4.3.2 The maximum peak EIRP shall not exceed the values as given in the following table:

Frequency range [GHz]	Maximum peak EIRP [dBm, measured in 50 MHz bandwidth]
$f \leq 1.6$	-50
$1.6 < f \leq 2.7$	-45
$2.7 < f \leq 3.4$	-36
$3.4 < f \leq 3.8$	-40
$3.8 < f \leq 4.8$	-30
$4.8 < f \leq 6.0$	-30
$6.0 < f \leq 8.5$	-0
$8.5 < f \leq 9$	-0 (see note)
$9 < f \leq 10.6$	-25
$f > 10.6$	-45

NOTE: Operation is subject to the implementation of DAA. If DAA is not implemented, the following applies: 8.5 GHz to 9 GHz \leq -25 dBm (measured in 50 MHz bandwidth).

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4.3.3 In order to protect Radio Astronomy Services; in the frequency range 2.69 GHz to 2.70 GHz and in the frequency range 4.8 to 5 GHz; the total radiated power density has to be below -65 dBm/MHz.

4.4 UWB devices for Building Material Analysis shall comply with EN 302 435-1.

4.4.1 The values of undesired emissions shall not exceed the values as given in the following table:

Frequency range (GHz)	Limit values of undesired emissions (dBm/MHz)	
	without LBT	with LBT
$f \leq 1.215$ (notes 1 and 2)	-85	-85
$1.215 f \leq f < 1.73$ (notes 1 and 2)	-85	-70
$1.73 f \leq f < 2.2$ (note1)	-65	-65
$2.2 f \leq f < 2.5$	-50	-50
$2.5 f \leq f < 2.69$	-65	-50
$2.69 f \leq f < 2.7$	-55	-55
$2.7 f \leq f < 3.4$	-70	-50
$3.4 f \leq f < 4.8$	-50	-50
$4.8 f \leq f < 5.0$	-55	-55
$5.0 f \leq f < 8.5$	-50	-50
$f \geq 8.5$	-85	-85

NOTE 1: In some frequency ranges the UWB emissions limits are very low power radio signals, comparable with the power limits of emissions from digital and analogue circuitry (other emissions, see clause 8.3.2.3 of EN 302 435-1.). If it can be clearly demonstrated that an emission from the ultra-wideband device is not the ultra-wideband emission identified in this table (e.g. by disabling the device's UWB transmitter) or it can clearly be demonstrated that it is impossible to differentiate between other emissions (OE) and the UWB transmitter emissions (UE) within the measurement uncertainty, then emission shall be considered as other emissions (OE) (see clause 8.3.2 of EN 302 435-1.).

NOTE 2: If, after optimization of the measurement set-up as described in clauses 6.1, 7.1 and 8.2.2 of EN 302 435-1, it is still not possible to identify any OE or UE emission above the noise floor, then it is considered that the UE limit is fulfilled.

Question 7: Do you have any further comments concerning the above provisions and technical conditions on UWB devices?

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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.