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RO-IR RLAN

TECHNICAL REGULATION

for the radio interface

regarding wireless access systems for broadband data transmission, including radio local area networks (WAS/RLAN)

(previous coding RO-IR 03 - specifications RO-IR 03-02 and RO-IR 03-03)

1. Basic Considerations

Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC was implemented in national legislation by Government Decision No 740/2016 on making available on the market of radio equipment, with subsequent amendments and completions.

This technical regulation contains the requirements for license-exempt use of radio spectrum by radio access systems intended for broadband data transmission devices, including radio local area networks (WAS/RLAN), in the specified frequency bands and considers compliance, especially, with the provisions of Article 3 Paragraph 2 and Articles 6-8 of Directive 2014/53/EU.

Nothing in this technical regulation shall preclude the obligation for radio equipment placed on the market or made available on the market in Romania to comply with Directive 2014/53/EU.

The obligations arising from Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services are met in this regulation (OJ L 241, 17.9.2015, p. 1-15).

All the Romanian technical regulations for the radio interfaces notified under Directive (EU) 2015/1535 shall be published and made available on National Authority for Management and Regulation in Communications (ANCOM) website at: https://www.ancom.ro/en/romanian-regulation_2719.

2. Radio Interface Specifications

Wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN)

Frequency band	**Annex**
5 150 – 5 250 MHz	RO-IR RLAN-01
5 250 – 5 350 MHz	RO-IR RLAN-02
5 470 – 5 725 MHz	RO-IR RLAN-03

Wireless access systems, including radio local area networks (WAS/RLANs) are broadband radio systems that enable wireless access to public and private applications regardless of the underlying network topology.

For the purpose of this technical regulation, *indoor use* means use in an enclosed space that shall provide the necessary attenuation to facilitate sharing with other services. Indoor use can be classified in four use cases, as identified in the technical conditions in the annexes to this regulation, which represent specific scenarios: inside buildings, inside road vehicles, inside trains and inside aircrafts.

For the purpose of this technical regulation, *equivalent isotropically radiated power (e.i.r.p.)* means the product of the power supplied to the antenna and the antenna gain in a given direction, relative to an isotropic antenna (absolute or isotropic gain).

For the purpose of this technical regulation, *mean equivalent isotropically radiated power (e.i.r.p.)* means e.i.r.p. for the duration of the transmission burst corresponding to the maximum power, if the power regulation was implemented to the transmitter.

For the purpose of this technical regulation, *non-interference and non-protected basis* means that no harmful interference may be caused to any radio communications services and that no claim may

be made for protection of these systems against harmful interference originating from radio communications services.

The use of radio spectrum by wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN) is allowed on a non-interference and non-protected basis provided that such systems meet the conditions set out in the Annexes below.

3. Document History:

Edition	Changes
Edition 1/2022 (11.10.2022)	According to Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC. The history of the frequency bands 5150-5350 MHz and 5470-5725 MHz is available in the technical regulation RO-IR 03 for the radio interface concerning broadband data transmission systems, 3rd edition.

ROMANIA	Radio Interface Specification	Wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN)	RO-IR RLAN-01	Edition 1/2022

	No	Parameter	Description	Comments
Normative part	1	**Radio communications service**	Mobile	
	2	**Application**	Wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN) Usage is allowed only indoors, including the installations inside road vehicles, inside trains and inside aircrafts and limited usage outdoors (Note 1). Use by unmanned aircraft systems (UAS) is limited to the band of 5170-5250 MHz.	*Note 1: When used outdoors, the equipment shall not be attached to a fixed installation or to the external body of road vehicles, to fixed infrastructure or to a fixed outdoor antenna.*
	3	**Frequency band**	5 150 – 5 250 MHz	*Harmonized radio spectrum in the 5 GHz frequency band (Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC)*
	4	**Channelling (channel distribution)**	-	
	5	**Modulation/Occupied bandwidth**	-	
	6	**Direction/Separation**	-	
	7	**Transmit power / Power density**	The 200 mW maximum mean e.i.r.p. for in-band emissions, with the following exceptions: - The 40 mW maximum mean e.i.r.p. applies to installations inside train cars with a mean attenuation of less than 12 dB; - The 40 mW maximum mean e.i.r.p. applies to installations inside road vehicles.	*The maximum mean e.i.r.p. density for in-band emissions are limited to 10 mW/MHz in any band of 1 MHz.*
	8	**Channel occupation and access rules**	Techniques to access spectrum and mitigate interference that provide an equivalent performance level to meet essential requirements described in Directive 2014/53/EU shall be used. If relevant techniques are described in harmonized standards or parts thereof, the references of which have been published in the Official Journal of the European Union in accordance with Directive 2014/53/EU, a performance at least equivalent to the level of performance associated with these techniques is ensured.	
	9	**Authorization regime**	Licence exemption	
	10	**Additional essential requirements (According to Article 3 Paragraph 3 of 2014/53/EU Directive)**	-	
	11	**Assumptions on spectrum planning**	-	

Informative Part	**12**	**Planned changes**	-	
	13	**Reference**	EN 301 893; Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC; ECC/DEC/(04)08	
	14	**Notification number**		
	15	**Remarks**	-	

F1- RTIR Edition:1; Revision:1

	No	Parameter	Description	Comments
Normative part	1	**Radio communications service**	Mobile	
	2	**Application**	Wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN) Indoor usage: inside buildings only. Installations inside road vehicles, trains and aircraft are not allowed (Note 2). Outdoor usage is not allowed.	*Note 2: The operation of WAS/RLAN networks on high-capacity aircrafts (except multi-engine helicopters) is allowed until 31 December 2028 with a maximum mean e.i.r.p. for emissions in the 100 mW band.* *In accordance with the Commission Regulation (EU) no 1321/2014, a high-capacity aircraft means an aircraft classified as an airplane with a maximum take-off mass of more than 5700 kg or a multi-engine helicopter. However, multi-engine helicopters are excluded from the scope of Note 2.*
	3	**Frequency band**	5 250 – 5 350 MHz	*Harmonized radio spectrum in the 5 GHz frequency band (Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC)*
	4	**Channelling (channel distribution)**	-	
	5	**Modulation/Occupied bandwidth**	-	
	6	**Direction/Separation**	-	
	7	**Transmit power / Power density**	The 200 mW maximum mean e.i.r.p. for in-band emissions The maximum mean e.i.r.p. density shall be limited to 10 mW/MHz in any 1 MHz band.	
	8	**Channel occupation and access rules**	The following mitigation techniques shall be used: • Transmitter power control (TPC) and • Dynamic frequency selection (DFS). Alternative mitigation techniques may be used if they ensure at least an equivalent performance and an equivalent level of spectrum protection in order to comply with the corresponding essential requirements of Directive 2014/53/EU and if these techniques comply with the technical requirements of Commission Implementing Decision (EU) 2022/179. Spectrum access and interference mitigation techniques are also used which ensure an adequate level of performance to comply with the essential requirements of Directive 2014/53/EU. If relevant techniques are described in harmonized standards or parts thereof, the references of which have been published in the Official Journal of the European Union in accordance with Directive 2014/53/EU, a performance at least equivalent to the level of performance associated with these techniques is ensured.	*TPC provides, on average, an attenuation factor of at least 3 dB of the systems' maximum allowable output power; or, if transmitter power control is not possible, the values for maximum mean e.i.r.p. and corresponding density limit of mean e.i.r.p. are reduced by 3 dB.* *DFS is described in ITU-R M. 1652-1 Recommendation ("Dynamic frequency selection in radio access systems, including radio local area networks, for the purpose of protecting the radiodetermination service in the 5 GHz band") to ensure an operation compatible with radio-determination systems. The DFS mechanism ensures the fact that the probability of selecting a particular channel is the same for all available channels in the 5 250-5 350 MHz and 5 470-5 725 MHz bands. The DFS mechanism also ensures, on average, a quasi-uniform distribution of the spectrum load.* *The WAS/RLAN shall implement a dynamic frequency selection that allows an attenuation of radar interference at least as effective as DFS as described in the ETSI EN 301 893 V2.1.1 standard. The WAS/RLAN settings (hardware and/or software) related to DFS shall not be*

				accessible to the user if changing those settings may cause the WAS/RLAN to no longer comply with the requirements of DFS. *The following settings shall also not be accessible to the user: (a) those that allow changing the country of operation and/or the operating frequency band if this results in the equipment no longer complying with the DFS requirements and (b) those which supports software and/or firmware that causes the equipment to no longer comply with DFS requirements.*
	9	**Authorization regime**	Licence exemption	
	10	**Additional essential requirements (According to Article 3 Paragraph 3 of 2014/53/EU Directive)**	-	
	11	**Assumptions on spectrum planning**	-	
Informative Part	**12**	**Planned changes**	-	
	13	**Reference**	EN 301 893; Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC; ECC/DEC/(04)08	
	14	**Notification number**	-	
	15	**Remarks**	-	

F1- RTIR Edition:1; Revision:1

	No	Parameter	Description	Comments
Normative part	1	**Radio communications service**	Mobile	
	2	**Application**	Wireless access systems intended for broadband data transmission, including radio local area networks (WAS/RLAN) Indoor and outdoor usage. Installations inside road vehicles, trains and aircrafts and the use by unmanned aerial vehicles (UAS) are not allowed (Note 3).	*Note 3: Operation of WAS/RLAN installations on large capacity aircrafts (except multi-engine helicopters), except in the 5 600–5 650 MHz frequency band, is allowed until 31 December 2028 with a maximum mean e.i.r.p. for emissions in the 100 mW band.* *In accordance with the Commission Regulation (EU) no. 1321/2014, a high-capacity aircraft means an aircraft classified as an airplane with a maximum take-off mass of more than 5 700 kg or a multi-engine helicopter. However, multi-engine helicopters are excluded from the scope of Note 3.*
	3	**Frequency band**	5 470 – 5 725 MHz	*Harmonized radio spectrum in the 5 GHz frequency band (Commission Implementing Decision (EU) 2022/179 on the harmonized use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC)*
	4	**Channelling (channel distribution)**	-	
	5	**Modulation/Occupied bandwidth**	-	
	6	**Direction/Separation**	-	
	7	**Transmit power / Power density**	The 1 W maximum mean e.i.r.p. for in-band emissions The maximum mean e.i.r.p. density shall be limited to 50 mW/MHz in any 1 MHz band.	
	8	**Channel occupation and access rules**	The following mitigation techniques shall be used: • Transmitter power control (TPC) and • Dynamic frequency selection (DFS). Alternative mitigation techniques may be used if they ensure at least an equivalent performance and an equivalent level of spectrum protection in order to comply with the corresponding essential requirements of Directive 2014/53/EU and if these techniques comply with the technical requirements of Commission Implementing Decision (EU) 2022/179. Spectrum access and interference mitigation techniques are also used which ensure an adequate level of performance to comply with the essential requirements of Directive 2014/53/EU. If relevant techniques are described in harmonized standards or parts thereof, the references	*TPC provides, on average, an attenuation factor of at least 3 dB of the systems maximum allowable output power; or, if transmitter power control is not possible, the values for maximum mean e.i.r.p. and corresponding density limit of mean e.i.r.p. are reduced by 3 dB.* *DFS is described in ITU-R M. 1652-1 Recommendation ("Dynamic frequency selection in radio access systems, including radio local area networks, for the purpose of protecting the radiodetermination service in the 5 GHz band") to ensure an operation compatible with radio-determination systems.*

			of which have been published in the Official Journal of the European Union in accordance with Directive 2014/53/EU, a performance at least equivalent to the level of performance associated with these techniques is ensured.	*The DFS mechanism ensures that the probability of selecting a particular channel is the same for all available channels in the 5 250-5 350 MHz and 5 470-5 725 MHz bands. The DFS mechanism also ensures, on average, a quasi-uniform distribution of the spectrum load.* *The WAS/RLAN shall implement a dynamic frequency selection that allows an attenuation of radar interference at least as effective as DFS as described in the ETSI EN 301 893 V2.1.1 standard. The WAS/RLAN settings (hardware and/or software) related to DFS shall not be accessible to the user if changing those settings may cause the WAS/RLAN to no longer comply with the requirements of DFS.* *The following settings shall also not be accessible to the user: (a) those that allow changing the country of operation and/or the operating frequency band if this results in the equipment no longer complying with the DFS requirements and (b) those which supports software and/or firmware that causes the equipment to no longer comply with DFS requirements.*
	9	**Authorization regime**	Licence exemption	
	10	**Additional essential requirements (According to Article 3 Paragraph 3 of 2014/53/EU Directive)**	-	
	11	**Assumptions on spectrum planning**	-	
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	14	**Notification number**	-	
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