

RO-IR UWB-08

TECHNICAL REGULATION

for the radio interface

concerning equipment using ultra-wideband (UWB) technology

(UWB onboard aircraft)

Notification number according to Directive 98/34/EC: 2015/143/RO

1. Basic considerations

Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation 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.

This technical regulation contains the requirements for the use of licence exempt of equipment using ultra-wideband (UWB) technology (UWB onboard aircraft) in the specified frequency bands and considers especially compliance with the provisions of Article 3 Paragraph 2 and Articles 6, 7 and 8 of Directive 2014/53/EU.

Nothing in this technical regulation shall preclude the need for equipment placed 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 have been met (OJ L 241, 17.9.2015, p. 1-15).

All Romanian technical regulations for the radio interfaces notified under Directive (EU) 2015/1535 will be published and will be made available on National Authority for Management and Regulation in Communications of Romania (ANCOM) web-site at: <http://www.ancom.org.ro/reglementari-interfete> 2723.

2. Radio Interface Specifications

UWB equipment (onboard aircraft)

Frequency range
$f \leq 1.6$ GHz
$1.6 < f \leq 2.7$ GHz
$2.7 < f \leq 3.4$ GHz
$3.4 < f \leq 3.8$ GHz
$3.8 < f \leq 6$ GHz
$6 < f \leq 6.65$ GHz
$6.65 < f \leq 6.6752$ GHz
$6.6752 < f \leq 8.5$ GHz
$8.5 < f \leq 10.6$ GHz
$f > 10.6$ GHz

For the purpose of this Technical Regulation, *equipment using ultra-wideband (UWB) technology* means equipment incorporating, as an integral part or as an accessory, a technology for short-range radiocommunication, involving the intentional generation and transmission of radio-frequency energy that spreads over a frequency band wider than 50 MHz, which may overlap several frequency bands allocated to radiocommunication services.

Onboard aircraft means the use of radio links for intra-aircraft only communications purposes inside an aircraft.

Maximum mean power spectral density, specified as e.i.r.p. of the radio device under test at a particular frequency, is the average power per unit bandwidth (centred on that frequency) radiated in the direction of the maximum level under the specified conditions of measurement.

Peak power, specified as e.i.r.p., is the power contained within a 50 MHz bandwidth at the frequency at which the highest mean radiated power occurs, radiated in the direction of the maximum level under the specified conditions of measurement.

For the purpose of this Technical Regulation, *non-interference and non-protected basis* means the interdiction that no harmful interference may be caused to any radio communications service and that no claim may be made for protection of these devices against harmful interference originating from radio communications services.

The use of radio spectrum by equipment using ultra-wideband (UWB) technology is allowed on a non-interference and non-protected basis provided that such equipment meets the conditions set out in the Annex.

3. Document history:

Edition	Changes
Edition 1/2015	Notification number according to Directive 98/34/EC: 2015/143/RO.
Edition 2/2018 (10.08.2018)	Update of the legal framework according to Point 1 – „Basic considerations“ and reference documents (row 13); Formal changes according to TCAM-RSC model of November 2017.

	Nr	Parameter	Description	Comments																																												
Normative part	1	Radiocommunication Service	Mobile																																													
	2	Application	Short Range Devices / UWB applications	<i>UWB onboard aircraft</i>																																												
	3	Frequency band	See row (7) below for applicable frequency bands	<i>Harmonised radio spectrum for ultra-wideband technology (Decision 2014/702/EU amending Decision 2007/131/EC)</i>																																												
	4	Channeling (channel distribution)	-																																													
	5	Modulation/Occupied bandwidth	-																																													
	6	Direction/Separation	-																																													
	7	Transmit power / Power density	<table border="1"> <thead> <tr> <th>Frequency range</th> <th>Maximum mean power spectral density (e.i.r.p)</th> <th>Maximum peak power (e.i.r.p) (defined in 50 MHz bandwidth)</th> <th>Requirements for mitigation techniques</th> </tr> </thead> <tbody> <tr> <td>$f \leq 1.6$ GHz</td> <td>- 90 dBm/MHz</td> <td>- 50 dBm</td> <td></td> </tr> <tr> <td>$1.6 < f \leq 2.7$ GHz</td> <td>- 85 dBm/MHz</td> <td>- 45 dBm</td> <td></td> </tr> <tr> <td>$2.7 < f \leq 3.4$ GHz</td> <td>- 70 dBm/MHz</td> <td>- 36 dBm</td> <td></td> </tr> <tr> <td>$3.4 < f \leq 3.8$ GHz</td> <td>- 80 dBm/MHz</td> <td>- 40 dBm</td> <td></td> </tr> <tr> <td>$3.8 < f \leq 6$ GHz</td> <td>- 70 dBm/MHz</td> <td>- 30 dBm</td> <td></td> </tr> <tr> <td>$6 < f \leq 6.65$ GHz</td> <td>- 41.3 dBm/MHz</td> <td>0 dBm</td> <td></td> </tr> <tr> <td>$6.65 < f \leq 6.6752$ GHz</td> <td>- 62.3 dBm/MHz</td> <td>- 21 dBm</td> <td>To meet a level - 62.3 dBm/MHz ⁽¹⁾ a 21 dB mitigation should be implemented</td> </tr> <tr> <td>$6.6752 < f \leq 8.5$ GHz</td> <td>- 41.3 dBm/MHz</td> <td>0 dBm</td> <td>7.25-7.75 GHz (Fixed Satellite Service - FSS) protection and 7.45-7.55 GHz (Meteorological Satellite - MetSat) protection ⁽¹⁾⁽²⁾ 7.75-7.9 GHz (Meteorological Satellite - Met Sat) protection ⁽¹⁾⁽³⁾</td> </tr> <tr> <td>$8.5 < f \leq 10.6$ GHz</td> <td>- 65 dBm/MHz</td> <td>- 25 dBm</td> <td></td> </tr> <tr> <td>$f > 10.6$ GHz</td> <td>- 85 dBm/MHz</td> <td>- 45 dBm</td> <td></td> </tr> </tbody> </table>	Frequency range	Maximum mean power spectral density (e.i.r.p)	Maximum peak power (e.i.r.p) (defined in 50 MHz bandwidth)	Requirements for mitigation techniques	$f \leq 1.6$ GHz	- 90 dBm/MHz	- 50 dBm		$1.6 < f \leq 2.7$ GHz	- 85 dBm/MHz	- 45 dBm		$2.7 < f \leq 3.4$ GHz	- 70 dBm/MHz	- 36 dBm		$3.4 < f \leq 3.8$ GHz	- 80 dBm/MHz	- 40 dBm		$3.8 < f \leq 6$ GHz	- 70 dBm/MHz	- 30 dBm		$6 < f \leq 6.65$ GHz	- 41.3 dBm/MHz	0 dBm		$6.65 < f \leq 6.6752$ GHz	- 62.3 dBm/MHz	- 21 dBm	To meet a level - 62.3 dBm/MHz ⁽¹⁾ a 21 dB mitigation should be implemented	$6.6752 < f \leq 8.5$ GHz	- 41.3 dBm/MHz	0 dBm	7.25-7.75 GHz (Fixed Satellite Service - FSS) protection and 7.45-7.55 GHz (Meteorological Satellite - MetSat) protection ⁽¹⁾⁽²⁾ 7.75-7.9 GHz (Meteorological Satellite - Met Sat) protection ⁽¹⁾⁽³⁾	$8.5 < f \leq 10.6$ GHz	- 65 dBm/MHz	- 25 dBm		$f > 10.6$ GHz	- 85 dBm/MHz	- 45 dBm		⁽¹⁾ <i>Alternative mitigation techniques offering equivalent protection such as the use of shielded portholes could be a solution.</i> ⁽²⁾ $- 51.3 - 20 \cdot \log_{10}(10[\text{km}]/x[\text{km}])(\text{dBm}/\text{MHz})$ for heights above ground > 1 000 m, where x is the aircraft height above ground in kilometres, and - 71.3 dBm/MHz for heights above ground of ≤ 1000 m. ⁽³⁾ $- 44.3 - 20 \cdot \log_{10}(10[\text{km}]/x[\text{km}])(\text{dBm}/\text{MHz})$ for heights above ground > 1 000 de m, where x is the aircraft height above ground in kilometres, and - 64.3 dBm/MHz for heights $\leq 1 000$ m.
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8	Channel occupation and access rules	-																																														
9	Authorisation 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	Decision 2014/702/EU amending Decision 2007/131/EC; EN 302 065-5	
	14	Notification number	2015/143/RO	
	15	Remarks		

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