



## Expanded unofficial version of Annex 6

to the decision of the State Commission on Radio Frequencies under the Security Council of the Republic of Belarus No. 12K/12 dated 28.08.2012

**Version 2022**

# RADIODETERMINATION APPLICATIONS

## Scope of application

This annex covers frequency bands and regulatory as well as informative parameters recommended for SRD radiodetermination applications including Equipment for Detecting Movement and Alert. Radiodetermination is defined as the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.

Radiodetermination equipment typically conducts measurements to obtain such characteristics.

Any kind of point-to-point or point-to-multipoint radio communications is outside of this definition.



**Table 6: Regulatory parameters**

Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
30 MHz-12.4 GHz	*	*	*	<b>EN 300 440</b> <b>EN 302 066</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By (note 1)</a>	<p>For radars of the thickness of the ground layer and walls (GPR/GPR). *Technical requirements must comply with the Solution <a href="#">ECC/DEC/(06)08</a></p> <p>The present applies to:</p> <ol style="list-style-type: none"> <li>1) Ground Probing Radars (GPR) operating over approximately one decade in the frequency range 30 MHz to 12,4 GHz radiating directly downwards into the ground.</li> <li>2) Wall Probing Radars (WPR) operating in the frequency range 30 MHz to 12,4 GHz radiating directly into a "wall". The "wall" is a building material structure, the side of a bridge, the wall of a mine or another physical structure that absorbs a significant part of the signal transmitted by the radar.</li> </ol>
2200-8000 MHz	*	*	*	<b>EN 300 440</b> <b>EN 302 065</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	<p>For material control sensors.            *Technical requirements must comply with Decision <a href="#">ECC/DEC/(07)01</a></p> <ol style="list-style-type: none"> <li>1) Contact-based sensors and imaging devices. The UWB transmitter is only switched on when in direct contact with the material under investigation;</li> <li>2) Non-contact-based sensor and imaging devices. The UWB transmitter is only switched on when in close proximity with the investigated material and the UWB transmitter is directed into the direction of the material under investigation (e.g. manually, by using a proximity sensor or by mechanical design).</li> </ol>



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
2400-2483.5 MHz	25 mW e.i.r.p.	No requirement	Not specified	<b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	
3100-4800 MHz	*	*	*	<b>EN 300 440</b> <b>EN 302 065</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	For ultra-wideband (UWB) location tracking type 2 (LT2). *Technical requirements should be in accordance with Recommendation <a href="#">ECC/REC/(11)09</a> (LT2 networks are not Electronic Communications Networks or Services according to the Directive 2002/20/EC)
3100-4800 MHz	*	*	*	<b>EN 300 440</b> <b>EN 302 065</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	For ultra-wideband (UWB) positioning systems for emergency services (LAES) subject to the applicable licensing regime. *Technical requirements must comply with Recommendation <a href="#">ECC/REC/(11)10</a>
4500-7000 MHz	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	Not specified	<b>EN 302 372</b> <b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	For Tank Level Probing Radar (TLPR). For TLPRs operating as Short Range Devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder. The radar applications are not intended for communications purposes. Their intended usage excludes any intended radiation into free space. Applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank.



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
8500 MHz-10.6 GHz	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	Not specified	<b>EN 302 372</b> <b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	<p>For Tank Level Probing Radar (TLPR). The radiated unwanted emissions within the frequency band 10.6-10.7 GHz outside the test tank enclosure shall be less than -60 dBm/MHz e.i.r.p.</p> <p>For TLPRs operating as Short Range Devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder. The radar applications are not intended for communications purposes. Their intended usage excludes any intended radiation into free space.</p> <p>Applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank.</p>
24.05-27 GHz	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	Not specified	<b>EN 302 372</b> <b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	<p>For Tank Level Probing Radar (TLPR).</p> <p>For TLPRs operating as Short Range Devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder. The radar applications are not intended for communications purposes. Their intended usage excludes any intended radiation into free space.</p> <p>Applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank.</p>



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
57-64 GHz	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	Not specified	EN 302 372 / No requirement	For Tank Level Probing Radar (TLPR). For TLPRs operating as Short Range Devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder. The radar applications are not intended for communications purposes. Their intended usage excludes any intended radiation into free space. Applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank.
75-85 GHz	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	Not specified	EN 302 372 / No requirement	For Tank Level Probing Radar (TLPR). For TLPRs operating as Short Range Devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder. The radar applications are not intended for communications purposes. Their intended usage excludes any intended radiation into free space. Applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank.
6000-8500 MHz	*	*	Not specified	EN 302 729 EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	For industrial level measurement radar (LPR). *Technical requirements must comply with Decision <a href="#">ECC/DEC/(11)02</a> The LPR applications are not intended for communications purposes.



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
24.05-26.5 GHz	*	*	Not specified	<b>EN 302 729</b> <b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	For industrial level measurement radar (LPR). *Technical requirements must comply with Decision <a href="#">ECC/DEC/(11)02</a> The LPR applications are not intended for communications purposes.
57-64 GHz	*	*	Not specified	<b>EN 302 729</b> / <b>No requirement</b>	For industrial level measurement radar (LPR). *Technical requirements must comply with Decision <a href="#">ECC/DEC/(11)02</a> The LPR applications are not intended for communications purposes.
75-85 GHz	*	*	Not specified	<b>EN 302 729</b> / <b>No requirement</b>	For industrial level measurement radar (LPR). *Technical requirements must comply with Decision <a href="#">ECC/DEC/(11)02</a> The LPR applications are not intended for communications purposes.
9200-9500 MHz	25 mW e.i.r.p.	No requirement	Not specified	<b>EN 300 440</b> <b>IEC 62311</b> / <a href="#">Regulation of Belarus TR 024 By</a>	



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
9500-9975 MHz	25 mW e.i.r.p.	No requirement	Not specified	EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	
10.5-10.6 GHz	500 mW e.i.r.p.	No requirement	Not specified	EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	
13.4-14 GHz	25 mW e.i.r.p.	No requirement	Not specified	EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	
17.1-17.3 GHz	26 dBm e.i.r.p.	Detect and Avoid (DAA)	Not specified	EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	For Ground Based Synthetic Aperture Radar (GBSAR). Specific requirements for the radar antenna pattern and for the implementation of Detect And Avoid (DAA) technique apply as described in EN 300 440.
24.05-24.25 GHz	100 mW e.i.r.p.	No requirement	Not specified	EN 300 440 IEC 62311 / <a href="#">Regulation of Belarus TR 024 By</a>	The frequency band 24.0-24.25 GHz is identified with the same emission parameters in <a href="#">Annex 1</a>



Frequency Band	Power / Magnetic Field	Spectrum access and mitigation requirements	Modulation / maximum occupied bandwidth	Harmonised Standards/ Confirmation of compliance	Notes
100 Hz-148 kHz	46 dB $\mu$ A/m at 10 m distance at 100 Hz outside the NMR device	No requirement	Not specified	<b>No requirement</b>	For enclosed Nuclear Magnetic Resonance (NMR) applications. Magnetic field strength descending 10dB/decade above 100 Hz
148-5000 kHz	-15 dB $\mu$ A/m at 10 m distance outside the NMR device	No requirement	Not specified	<b>No requirement</b>	For enclosed Nuclear Magnetic Resonance (NMR) applications
5000 kHz-30 MHz	-5 dB $\mu$ A/m at 10m distance outside the NMR device	No requirement	Not specified	<b>No requirement</b>	For enclosed Nuclear Magnetic Resonance (NMR) applications
30-130 MHz	-36 dBm e.r.p. outside the NMR device	No requirement	Not specified	<b>No requirement</b>	For enclosed Nuclear Magnetic Resonance (NMR) applications
76-77 GHz	*	*	*	<b>No requirement</b>	For ground-based high-definition synthetic aperture radar (HD-GBSAR) [Ground Based Synthetic Aperture Radar] . *Technical requirements must comply with Decision <a href="#">ECC/DEC/(21)02</a>



**Notes:**

1. **Only for devices using frequency bands from 25 MHz - 30 GHz**

**Additional information**

Enclosed NMR sensors are devices where the material/object under investigation is put inside the enclosure of the NMR device.

NMR techniques use nuclear magnetic resonance excitation and magnetic field strength response of a material/object under test to get information about material properties based on resonance frequency responses of isotopes of atoms. Nuclear magnetic resonance imaging and magnetic resonance tomography systems are not included in this scope.

**DECISION OF THE STATE COMMISSION ON RADIO FREQUENCIES UNDER THE SECURITY COUNCIL OF THE REPUBLIC OF BELARUS****No. [12K/12](#):**

«The allocation of radio frequency spectrum for short range radio electronics» (SRD) is based on the European Radiocommunications Committee/Recommendation 70-03 ([ERC/REC 70-03](#)).

All notes indicated in the tables (appendices 1-13 to decision [12K/12](#)) are a mandatory requirement. Appendices 1-13 to Decision [12K/12](#) also partially take into account [COMMISSION IMPLEMENTING DECISION 2013/752/EU](#) on harmonization of the radio spectrum for use by short-range devices.

**The current version of the technical regulations**

Republic of Belarus "Means of telecommunication. Safety" ([TR 2018/024/BY](#)) **confirmation of compliance is required** for short-range radio communication devices, including radio modules that are part of other equipment operating in the radio frequency band from 25 MHz to 30 GHz (Annex 2, paragraph 10 of the technical regulations)

