

**RO-IR 05**

**TECHNICAL REGULATION**

**for the radio interface**

**concerning Transport and Traffic Telematics systems (TTT)**

**98/34/EC Notification number: 2014/601/RO**

## 1. Basic considerations

The Radio Equipment and Telecommunications Terminal Equipment Directive 1999/5/EC (R&TTE Directive) was implemented in Romania (RO) by Government Decision No. 130/2015.

This technical regulation contains the necessary equipment parameters for the use of Transport and Traffic Telematics systems in the specified frequency bands and considers especially compliance with Articles 3.2, 4.1, 6 and 7.2 of Directive 1999/5/EC.

Nothing in this Technical Regulation shall preclude the need for equipment placed on the market in Romania to comply with Directive 1999/5/EC.

The obligations arising from Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services (OJ L 204 p. 37), as amended by Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 (OJ L 217 p. 18), have been met.

All Romanian Technical Regulations notified under Directive 1998/34/EC will be published and will be made available free of charge from the ANCOM web-site at:

[http://www.ancom.org.ro/en/interface-regulations-\\_2723](http://www.ancom.org.ro/en/interface-regulations-_2723)

## 2. Radio Interface Specifications

### Transport and Traffic Telematics

Frequency band	Annex
984 – 7 484 kHz	RO-IR 05–01
7 300 – 23 000 kHz	RO-IR 05–02
5 795 – 5 805 MHz	RO-IR 05–03a; RO-IR 05–03b
5 805 – 5 815 MHz	RO-IR 05–04
24.05 – 24.075 GHz	RO-IR 05–05
24.075 – 24.15 GHz	RO-IR 05–06a; RO-IR 05–06b
24.15 – 24.25 GHz	RO-IR 05–07
24.25 – 24.495 GHz	RO-IR 05–08
24.25 – 24.5 GHz	RO-IR 05–09
24.495 – 24.5 GHz	RO-IR 05–10
63 – 64 GHz	RO-IR 05–11
76 - 77 GHz	RO-IR 05–12

For the purpose of this technical regulation, *short-range device (SRD)* means radio transmitters which provide either unidirectional or bidirectional communication and which transmit over a short distance at low power.

The *transport and traffic telematics* device category covers radio devices that are used in the fields of transport (road, rail, water or air, depending on the relevant technical restrictions), traffic management, navigation, mobility management and in intelligent transport systems (ITS). Typical applications are used for interfaces between different modes of transport, communication between vehicles (e.g. car to car), between vehicles and fixed locations (e.g. car to infrastructure) as well as communication from and to users.

For the purpose of this technical regulation, *Eurobalise/ Euroloop* means the wayside transmission unit that uses the magnetic transponder technology. Its main function is to transmit and/or receive signals through the air gap. The Eurobalise/ Euroloop is a single device mounted on the track, which communicates with a train passing over it.

For the purpose of this technical regulation, *magnetic transponder technology* means the method that uses magnetic coupling in the air gap between a transmitter and a receiver for conveying data and energy.

For the purpose of this technical regulation, *bumper* means the 3D shaped plastic sheet normally mounted in front of the Narrow Band Short Range Radar (NB SRR) for Transport and Traffic Telematics (TTT) applications.

For the purpose of this technical regulation, *dwelt time* means in general a time interval for which a certain frequency range is occupied.

For the purpose of this technical regulation, *cumulated dwelt time* is the sum of individual dwelt times within a measurement time frame and in a defined frequency range.

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 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 Transport and Traffic Telematics systems including radar system installations to be used in vehicles is allowed provided that such systems meet the conditions set out in the Annexes.

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-01	Edition 1/ 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available for Eurobalise transmissions in the presence of trains and using the 27 MHz band for telepowering.</i>
	3	Frequency band	984 – 7 484 kHz Center frequency is 4 234 kHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	9 dBμA/m at 10 meters	
	8	Channel access and occupation rules	Duty cycle: up to 1 %	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 608; ERC/REC 70-03; Decision 2013/752/EU amending Decision 2006/771/EC	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-02	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available for Euroloop transmissions in the presence of trains and using the 27 MHz band for telepowering.</i>
	3	Frequency band	7 300 – 23 000 kHz Center frequency is 13 547 kHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	- 7 dB $\mu$ A/m at 10 meters	<i>The transmitted magnetic field strength shall not exceed -7 dB<math>\mu</math>A/m at 10 m distance within the frequency range of 11.1 MHz to 16.0 MHz measured in a bandwidth of 10 kHz spatially averaged over any 200 m length of the loop. Spread Spectrum Signal, Code Length: 472 chips.</i>
	8	Channel access and occupation rules	Antenna restrictions apply as specified in the harmonised standards adopted under Directive 1999/5/EC.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 609; ERC/REC 70-03; Decision 2013/752/EU amending Decision 2006/771/EC	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-03a	Edition 1/ 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions applies only to road tolling applications.</i>
	3	Frequency band	5 795 – 5 805 MHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	2 W equivalent isotropic radiated power (e.i.r.p.)	
	8	Channel access and occupation rules	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonized standards adopted under Directive 1999/5/EC must be used.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 300 674; ERC/REC 70-03; Decision 2013/752/EU amending Decision 2006/771/EC	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-03b	Edition 1/ 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	
	3	Frequency band	5 795 – 5 805 MHz	
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	8 W equivalent isotropic radiated power (e.i.r.p.)	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 300 674; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-04	Edition 1/ 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	
	3	Frequency band	5 805 – 5 815 MHz	
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	a) 2 W e.i.r.p. b) 8 W e.i.r.p.	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Individual licensing	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 300 674; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	



ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-05	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	
	3	Frequency band	24.05 – 24.075 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	100 mW e.i.r.p.	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-06a	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available to ground-based vehicle radars.</i>
	3	Frequency band	24.075 – 24.15 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	100 mW e.i.r.p.	
	8	Channel access and occupation rules	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Dwell time limits and frequency modulation range apply as specified in harmonised standards.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-06b	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	
	3	Frequency band	24.075 – 24.15 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	0.1 mW e.i.r.p.	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-07	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	
	3	Frequency band	24.15 – 24.25 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	100 mW e.i.r.p.	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-08	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available to ground-based vehicle radars operating in the harmonised 24 GHz frequency range.</i>
	3	Frequency band	24.25 – 24.495 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	- 11 dBm e.i.r.p.	
	8	Channel access and occupation rules	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Duty cycle limits and frequency modulation ranges apply as specified in harmonised standards.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-09	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available to ground-based vehicle radars operating in the harmonised 24 GHz frequency range.</i>
	3	Frequency band	24.25 – 24.5 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	20 dBm e.i.r.p. (forward-facing radars) 16 dBm e.i.r.p. (rear-facing radars)	
	8	Channel access and occupation rules	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Duty cycle limits and frequency modulation ranges apply as specified in harmonised standards.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-10	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions is only available to ground-based vehicle radars operating in the harmonised 24 GHz frequency range.</i>
	3	Frequency band	24.495 – 24.5 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	- 8 dBm e.i.r.p.	
	8	Channel access and occupation rules	Techniques to access spectrum and mitigate interference that provide at least equivalent performance to the techniques described in harmonised standards adopted under Directive 1999/5/EC must be used. Duty cycle limits and frequency modulation ranges apply as specified in harmonised standards.	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 858; Decision 2013/752/EU amending Decision 2006/771/EC; ERC/REC 70-03	
	14	Notification number	2014/601/RO	
	15	Remarks	-	

ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-11	Edition 1 / 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions applies to vehicle-to-vehicle, vehicle-to-infrastructure and infrastructure-to-vehicle systems only.</i>
	3	Frequency band	63 - 64 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	40 dBm e.i.r.p.	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 302 686; Decision 2013/752/EU amending Decision 2006/771/EC; ECC/DEC/(09)01	
	14	Notification number	2014/601/RO	
	15	Remarks	-	



ROMANIA	Radio Interface Specification	SRD / TTT	RO-IR 05-12	Edition 1/ 2014
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	Nr	Parameter	Description	Comments
Normative part	1	Radiocommunication Service	Mobile	
	2	Application	Short Range Devices / Transport and Traffic Telematics (TTT)	<i>This set of usage conditions applies to terrestrial vehicle and infrastructure systems only</i>
	3	Frequency band	76 - 77 GHz	<i>Harmonised radio spectrum for use by short-range devices (Decision 2013/752/EU amending Decision 2006/771/EC)</i>
	4	Channelling	-	
	5	Modulation / Occupied bandwidth	-	
	6	Direction / Separation	-	
	7	Transmit power / Power density	55 dBm peak e.i.r.p. and 50 dBm mean e.i.r.p. for systems others than pulse radars 55 dBm peak e.i.r.p. and 23,5 dBm mean e.i.r.p. for pulse radars	
	8	Channel access and occupation rules	-	
	9	Authorisation regime	Licence exemption	
	10	Additional essential requirements	-	
	11	Frequency planning assumptions	-	
Informative part	12	Planned changes	-	
	13	Reference	EN 301 091; ERC/REC 70-03; Decision 2013/752/EU amending Decision 2006/771/EC	
	14	Notification number	2014/601/RO	
	15	Remarks	-	