

UNITED REPUBLIC OF TANZANIA
TANZANIA COMMUNICATIONS REGULATORY AUTHORITY
ISO 9001:2008 CERTIFIED



MINIMUM TECHNICAL SPECIFICATIONS

FOR

SHORT RANGE DEVICES

AUGUST 2016

1.0 General Requirements

1.1 Scope of Specification

This Specification defines the minimum technical requirements for short range device transmitters and receivers to operate in one of the authorised frequency bands or frequencies, and transmit within the corresponding output power levels given in Table 1 and 2. Short range devices are intended for communications in confined areas of buildings as well as for localised on-site operations.

Short range devices may be fixed, mobile or portable stations that come with a radio frequency output connector and dedicated antenna or an integral antenna. Applications include alarms and movement detectors, closed-circuit television (CCTV), access control (including door and gate openers), medical implants, identification systems, radio-detection, vehicle radar systems, wireless local area networks, remote controls, telecommand, telemetry and on-site paging systems. These devices may employ different types of modulation and may have speech application.

1.2 Design of Short Range Device

Short range devices shall be designed to meet the following basic objectives:

- a) The device is intended for operating in unprotected and shared frequency bands. Its operation shall not cause interference with other authorised radio-communication services, and be able to tolerate any interference caused by other radio-communication services, electrical or electronic equipment.
- b) The device shall not be constructed with any external or readily accessible control which permits the adjustment of its operation in a manner that is inconsistent with this specification.
- c) The device shall be marked with the supplier/manufacture's name or identification mark, and the supplier/manufacture's model or type reference. The markings shall be legible, indelible and readily visible.

2.0 Technical Requirements

The short range device shall comply with the maximum field strength or radio frequency (RF) output power and spurious emissions given in Table 1 and 2, operating in its intended frequency band or frequencies. It shall fulfil the relevant requirements of this Specification on all the permitted frequencies which it is intended to operate.

Table 1: Technical Requirements for Short Range Devices (SRD)

Authorised Frequency Bands / Frequencies		Maximum Field Strength / RF Output power	Transmitter Spurious Emissions	Applicable Radio Standards	Typical Application Types	Remarks
1	16 – 150 kHz	≤ 66 dBμA/m @ 10m	≥ 32 dB below carrier at 3 m or EN 300 224-1 EN 300 330-1	EN 300 224-1 EN 300 330-1	Induction loop system / RFID	
	150 – 5000 kHz	≤ 13.5 dBμA/m @ 10m				
	6765 – 6795 kHz	≤ 42 dBμA/m @ 10m				
	7400 – 8800 kHz	≤ 9 dBμA/m @ 10m				
2	0.016 – 0.150 MHz	≤ 100 dBμV/m @ 3m	≥ 32 dB below carrier at 3 m or EN 300 330-1 EN 302 291-1	EN 300 330-1 EN 302 291-1	Radio detection, alarm system	
3	13.553 – 13.567 MHz	≤ 94 dBμV/m @ 10m				
4	146.35 – 146.50 MHz	≤ 100 mW (e.r.p.)	≥ 32 dB below carrier at 3 m or EN 300 220-1	EN 300 220-1		
	240.15 – 240.30 MHz					
	300.00 – 300.30 MHz					
	312.00 – 316.00 MHz					
5	0.51 – 1.60 MHz	≤ 57 dBμV/m @ 3m			Wireless microphone	
6	40.66 – 40.70 MHz	≤ 65 dBμV/m @ 10m				
7	88.00 – 108.00 MHz	≤ 60 dBμV/m @ 10m				
8	470.00 – 694.00 MHz	≤ 10 mW (e.r.p.)				
9	169.40 – 175.00 MHz	≤ 500 mW (e.r.p.)	≥ 32 dB below carrier at 3 m or EN 300 220-1	EN 300 220-1 EN 300 422-1	Wireless microphone, Hearing/Audio	
	180.00 – 200.00 MHz	≤ 112 dBμV/m @				

	487.00 – 507.00 MHz	10m	EN 300 422-1		assistance aids	
10	26.96 – 27.28 MHz	≤ 100 mW (e.r.p.) Note 1	≥ 32 dB below carrier at 3 m or EN 300 220-1	EN 300 220-1	Remote controls of garage door, cameras, toys and miscellaneous devices	
	34.995 – 35.225 MHz	≤ 100 mW (e.r.p.)				
	40.665 – 40.695 MHz	≤ 500 mW (e.r.p.)				
	40.77 – 40.83 MHz					
	72.13 – 72.21 MHz					
11	26.96 – 27.28 MHz 29.70 – 30.00 MHz	≤ 500 mW (e.r.p.)			Remote controls of aircraft and glider models, telemetry, detection and alarm systems	
	12	26.96 – 27.28 MHz 40.66 – 40.70 MHz	≤ 500 mW (e.r.p.)	≥ 32 dB below carrier at 3 m; or EN 300 135-1 EN 300 433-1 EN 300 224-1	EN 300 135-1 EN 300 433-1 EN 300 224-1	On-site radio paging system
13		151.125 MHz 151.150 MHz	≤ 1000 mW (e.r.p.)	≥ 60 dB below carrier over 100 kHz to 2000 MHz or EN 300 224-1	EN 300 224-1	
	14	9 – 315 kHz	≤ 30 dBμA/m @10m	EN 302 195-1	EN 302 195-1	
40.50 – 41.00 MHz		≤ 0.01 mW (e.r.p.) Note 1	≥ 32 dB below carrier at 3 m or EN 300 220-1	EN 300 220-1		
216.00 – 217.00 MHz		> 25 μW to ≤ 100 mW (e.r.p.)				
454.00 – 454.50 MHz		≤ 2 mW (e.r.p.)				

15	1427.00 – 1432.00 MHz	> 25 μ W to \leq 100 mW (e.r.p.)	EN 300 440-1	EN 300 440-1		
17	72.080 MHz 72.200 MHz 72.400 MHz 72.600 MHz 158.275/162.875 MHz 158.325/162.925 MHz 453.7250/458.7250 MHz 453.7375/458.7375 MHz 453.7500/458.7500 MHz 453.7625/458.7625 MHz	\leq 1000 mW (e.r.p.)	\geq 43 dB below carrier over 100 kHz to 2000 MHz or EN 300 390-1 EN 300 113-1	EN 300 390-1 EN 300 113-1	Wireless modem, data communication system	
18	76 – 77 GHz	\leq 37 dBm (e.i.r.p.) Note 2 when vehicle is in motion \leq 23.5 dBm (e.i.r.p.) when vehicle is stationary	EN 301 091	EN 301 091	Short range radar systems such as automatic cruise control and collision warning systems for vehicle	
19	433.05 – 434.79 MHz	\leq 10 mW (e.r.p.) Note 1	\geq 32 dB below carrier at 3 m or EN 300 220-1	EN 300 220-1	Radio telemetry, Telecommand system	
20	866 – 869 MHz 920 – 925 MHz	\leq 500 mW (e.r.p.)	\geq 32 dB below carrier at 3 m or EN 300 220-1 EN 302 208	EN 300 220-1 EN 302 208	Radio Telemetry, Telecommand, RFID system	
21	2.4000 – 2.4835 GHz	\leq 100 mW (e.i.r.p.)	EN 300 440-1 EN 302 288-1	EN 300 440-1 EN 302 288-1	Wireless video transmitter and other SRD	
22	10.50 – 10.55 GHz	\leq 117 dB μ V/m @				Radar gun

		10m			applications	devices are not allowed to operate under this provision.
23	24.00 – 24.25 GHz	≤ 100 mW (e.i.r.p.)				
24	2.4000 – 2.4835 GHz	≤ 100 mW (e.i.r.p.) Note 2	EN 300 328	EN 300 328	Bluetooth	
25	2.4000 – 2.4835 GHz	≤ 200 mW (e.i.r.p.)			Wireless LAN only	WLAN for non-localised operations shall be approved on an exceptional basis.
26	5.725 – 5.850 GHz	≤ 100 mW (e.i.r.p.)	15.209	15.247 or 15.407	SRD application	
27	5.725 – 5.850 GHz	≤ 1000 mW (e.i.r.p.)			Wireless LAN and broadband access only	Non-localised operations shall be approved on an exceptional basis.
28	5.150 – 5.350 GHz	> 100 mW (e.i.r.p.) Note 2 ≤ 200 mW (e.i.r.p.)	EN 301 893	EN 301 893	Wireless LAN	WLAN operating in 5.250 – 5.350 GHz under this provision shall employ Dynamic Frequency Selection (DFS) mechanism and implement Transmit Power Control (TPC). Non-localised operations shall

						be approved on an exceptional basis.
29	5.150 – 5.350 GHz	≤ 100 mW (e.i.r.p.)	EN 301 893	EN 301 893	Wireless LAN	WLAN operating under this provision shall implement DFS function in the frequency range 5.250 – 5.350 GHz. Non-localised operations shall be approved on an exceptional basis.
30	5.470 – 5.725 GHz	≤ 1000 mW (e.i.r.p.) Note 2	EN 301 893	EN 301 893	Wireless LAN and broadband access	WLAN operating under this provision shall employ Dynamic Frequency Selection (DFS) mechanism and implement Transmit Power Control (TPC). Non-localised operations shall be approved on an exceptional basis.
31	57 – 66 GHz	≤10W (e.i.r.p)	EN 302 567	EN 302 567	Wireless LAN and	Indoor use is

			EN 305 550-1	EN 305 550-1	broadband access	restricted to maximum mean EIRP density of 13 dBm/MHz Outdoor use is restricted to maximum EIRP of 25 dBm and maximum EIRP power spectral density of -2 dBm/MHz
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Note 1 Effective Radiated Power (e.r.p.) refers to radiation of a half wave tuned dipole, which is used for frequencies below 1 GHz.

Note 2 Equivalent Isotropic Radiated Power (e.i.r.p.) is a product of the power supplied to the antenna and the maximum antenna gain, relative to an isotropic antenna, and is used for frequencies above 1 GHz. There is a constant difference of 2.15 dB between e.i.r.p. and e.r.p. [e.i.r.p. (dBm) = e.r.p. (dBm) + 2.15]

Table 2: Technical Requirements for Short Range Devices (SRD) – Operation Requires Approval						
Authorised Frequency Bands / Frequencies		Maximum Field Strength / RF Output power	Transmitter Spurious Emissions	Applicable Radio Standards	Typical Application Types	Remarks
1	170.275 MHz 170.375 MHz 173.575 MHz 173.675 MHz 451.750 MHz 452.000 MHz 452.050 MHz 452.325 MHz	≤ 1000 mW (e.r.p.) Note 1			Remote control of cranes and loading arms	Operating under these provisions shall be approved on an exceptional basis.
2	26.96 – 27.28 MHz	> 500 mW	≥ 32 dB below	EN 300 135-1	On-site radio	Operating under

	40.66 – 40.70 MHz	(e.r.p.) ≤ 3000 mW (e.r.p.)	carrier at 3 m or EN 300 135-1 EN 300 433-1 EN 300 224-1	EN 300 433-1 EN 300 224-1	paging system	these provisions shall be approved on an exceptional basis.
3	151.125 MHz 151.150 MHz	>1000 mW (e.r.p.) ≤ 3000 mW (e.r.p.)	≥ 60 dB below carrier over 100 kHz to 2000 MHz or EN 300 224-1	EN 300 224-1		
4	920 – 925 MHz	> 500 mW (e.r.p.) ≤ 2000 mW (e.r.p.)	≥ 32 dB below carrier at 3 m or EN 300 220-1 EN 302 208	EN 300 220-1 EN 302 208	Radio Frequency Identification (RFID) systems	Only RFID systems operating in the 920 -925 MHz frequency band shall be allowed to transmit between 500 mW and 2000 mW (e.r.p.), and approved on an exceptional basis.

Note 1 Effective Radiated Power (e.r.p.) refers to radiation of a half wave tuned dipole, which is used for frequencies below 1 GHz.

Note 2 Equivalent Isotropic Radiated Power (e.i.r.p.) is a product of the power supplied to the antenna and the maximum antenna gain, relative to an isotropic antenna, and is used for frequencies above 1 GHz. There is a constant difference of 2.15 dB between e.i.r.p. and e.r.p. [e.i.r.p. (dBm) = e.r.p. (dBm) + 2.15]

3.0 Technical Requirements

The short range device shall be tested for compliance with the applicable technical requirements stipulated in section 2 and Table 1 and 2 of this Specification, following test methods and conditions given in one or more of the following references which may be applicable to the device under test (refer to Table 1 and 2 for guidance):

All specifications are subject to revision due to the possibility of applying the most recent editions of the specifications.

- ETSI EN 300 113-1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement

- ETSI EN 300 135-1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Angle-modulated Citizens Band radio equipment (CEPT PR 27 Radio Equipment); Part 1: Technical characteristics and methods of measurement

- ETSI EN 300 220-1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio Equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods

- ETSI EN 300 224-1 Electromagnetic compatibility and Radio spectrum Matters (ERM); On-site paging service; Part 1: Technical and functional characteristics, including test methods

- ETSI EN 300 328 Electromagnetic compatibility and Radio spectrum Matters (ERM);

Wideband transmission systems;
Data transmission equipment
operating in the 2.4 GHz ISM
band and using spread spectrum
modulation techniques;
Harmonised EN covering essential
requirements under article 3.2 of
the R&TTE Directives

- ETSI EN 300 330-1
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Radio equipment in the frequency
range 9 kHz to 25 MHz and
inductive loop systems in the
frequency range 9 kHz to 30
MHz; Part 1: Technical
characteristics and test methods
- ETSI EN 300 390-1
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Land mobile service; Radio
equipment intended for the
transmission of data (and
speech) and using an integral
antenna; Part 1: Technical
characteristics and methods of
measurement
- ETSI EN 300 440-1
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Short range devices; Radio
equipment to be used in the 1
GHz to 40 GHz frequency range;
Part 1: Technical characteristics
and test methods
- ETSI EN 300 422-1
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Wireless microphones in the 25
MHz to 3 GHz frequency range;
- ETSI EN 300 433-1
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Citizens' Band (CB) radio
equipment; Part 1: Technical
characteristics and methods of
measurement
- ETSI EN 301 091
Electromagnetic compatibility and
Radio spectrum Matters (ERM);

- Short Range Devices; Road Transport and Traffic Telematics (RTTT); Radar equipment operating in the 76 GHz to 77 GHz range;
- ETSI EN 301 893
Broadband Radio Access Network (BRAN); 5 GHz high performance RLAN; Harmonised EN covering essential requirements of article 3.2 of the R&TTE Directive
- ETSI EN 301 839
Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Active Medical Implants (ULP-AMI) and Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz;
- ETSI EN 302 195
Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 9 kHz to 315 kHz for Ultra Low Power Active Medical Implants (ULP-AMI) and accessories
- ETSI EN 302 291
Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz;
- ETSI EN 302 208
Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio Frequency Identification equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W
- ETSI EN 302 288
Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range;

- ETSI EN 302 537
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Ultra-Low Power Medical Data
Service Systems
operating in the frequency range
401 MHz to 402 MHz and 405
MHz to 406 MHz;

- ETSI EN 302 567
Broadband Radio Access
Networks (BRAN); 60 GHz
Multiple-Gigabit WAS/RLAN
Systems; Harmonized EN
covering the essential
requirements of article 3.2 of the
R&TTE Directive

- ETSI EN 305 550
Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Radio equipment to be used in
the 40 GHz to 246 GHz frequency
range