



**Short Range Devices (SRD)
using Ultra Wide Band technology (UWB);
Receiver technical requirements, parameters and
measurement procedures to fulfil the requirements of the
Directive 2014/53/EU**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Introduction

In June 2016, the Directive 2014/53/EU [i.1] will replace the R&TTE Directive [i.2]. One of the main differences is that article 3.2 of the new Directive requires not only transmitters/transceivers, but also receivers to use spectrum efficiently and effectively and protect against harmful interference.

ETSI has published ETSI EG 203 336 [i.3] covering receiver parameters to be considered when updating harmonised standards. However, the parameter selection in that guide suggests that it was written with narrowband systems operating in licensed, channelized bands in mind.

The present document contains the results of the specialist task force (STF) 494 dealing with receiver parameters for ultra-wideband (UWB) applications.

1 Scope

The present document specifies receiver technical requirements, parameters and measurement procedures for UWB technologies.

It is a reference document for drafting new or revised UWB harmonised standards to fulfil the requirements of the Directive 2014/53/EU [i.1].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 303 883: "Short Range Devices (SRD) using Ultra Wide Band (UWB); Measurement Techniques".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] 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.
- [i.2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.
- [i.3] ETSI EG 203 336: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.4] IEEE 802.15.4™-2011: "Part 15.4: Low-rate wireless personal area networks (LR-WPANs)", September 2011.
- [i.5] ETSI EN 302 510-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 30 MHz to 37,5 MHz for Ultra Low Power Active Medical Membrane Implants and Accessories; Part 1: Technical characteristics and test methods".
- [i.6] ETSI TR 102 309 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Ultra Low Power Active Medical Implants (ULP-AMI); "Membrane Implant" devices operating in the 30 MHz to 37,5 MHz band; System Reference Document".

- [i.7] ETSI EN 300 220-1 (V2.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods".
- [i.8] ETSI EN 300 224-1 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); On-site paging service; Part 1: Technical and functional characteristics, including test methods".
- [i.9] ETSI EN 302 077-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the Terrestrial - Digital Audio Broadcasting (T-DAB) service; Part 1: Technical characteristics and test methods".
- [i.10] ETSI EN 302 054-1 (V1.2.1): "Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; Part 1: Technical characteristics and test methods".
- [i.11] ETSI EN 302 152-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Satellite Personal Locator Beacons (PLBs) operating in the 406,0 MHz to 406,1 MHz frequency band; Part 1: Technical characteristics and methods of measurement".
- [i.12] ETSI EN 301 502 (V12.1.6): "Global System for Mobile communications (GSM); Base Station (BS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.13] ETSI TS 145 005 (V12.5.0): "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception (3GPP TS 45.005 version 12.5.0 Release 12)".
- [i.14] ETSI EN 301 511 (V12.1.1): "Global System for Mobile communications (GSM); Harmonized EN for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under article 3.2 of the R&TTE directive (1999/5/EC)".
- [i.15] ETSI EN 302 208-1 (V2.1.1): "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 and in the band 915 MHz to 921 MHz with power levels up to 4 W; Part 1: Technical requirements and methods of measurement".
- [i.16] ETSI EN 302 018-1 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the Frequency Modulated (FM) sound broadcasting service; Part 1: Technical characteristics and test methods".
- [i.17] ETSI EN 300 422-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.18] ETSI EN 301 908-13 (V11.0.1 draft): "IMT cellular networks; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)".
- [i.19] ETSI EN 301 908-3 (V7.1.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 3: CDMA Direct Spread (UTRA FDD) Base Stations (BS)".
- [i.20] ETSI EN 301 908-2 (V11.0.1 draft): "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Radio Equipment Directive 2014/53/EU; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)".
- [i.21] ETSI EN 301 908-4 (V6.2.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 4: CDMA Multi-Carrier (cdma2000) User Equipment (UE)".
- [i.22] ETSI EN 301 908-5 (V5.2.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 5: CDMA Multi-Carrier (cdma2000) Base Stations (BS)".

- [i.23] ETSI EN 300 422-1 (V1.5.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement".
- [i.24] ETSI EN 301 166-1 (V1.3.2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment for analogue and/or digital communication (speech and/or data) and operating on narrow band channels and having an antenna connector; Part 1: Technical characteristics and methods of measurement".
- [i.25] ETSI TS 100 910 (V8.20.0): "Digital cellular telecommunications system (Phase 2+); Radio Transmission and Reception (3GPP TS 05.05 version 8.20.0 Release 1999)".
- [i.26] ETSI TS 136 104 (V12.9.0): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 12.9.0 Release 12)".
- [i.27] ETSI TS 136 101 (V12.7.0): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 12.7.0 Release 12)".
- [i.28] ETSI TS 125 101 (V12.6.0): "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) radio transmission and reception (FDD) (3GPP TS 25.101 version 12.7.0 Release 12)".
- [i.29] ETSI EN 301 908-10 (V4.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 10: Harmonised Standard for IMT-2000, FDMA/TDMA (DECT) covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.30] ETSI EN 300 175-2 (V2.6.1): "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".
- [i.31] 3GPP2 C.S0002-E (V3.0): "Physical Layer Standard for cdma2000 Spread 2 Spectrum Systems".
- [i.32] ETSI EN 301 908-6 (V5.2.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 6: CDMA TDD (UTRA TDD) User Equipment (UE)".
- [i.33] ETSI TS 125 102: "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) radio transmission and reception (TDD) (3GPP TS 25.102)".
- [i.34] ETSI EN 301 908-7 (V5.2.1): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 7: CDMA TDD (UTRA TDD) Base Stations (BS)".
- [i.35] ETSI TS 125 104: "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104)".
- [i.36] ETSI EN 301 908-14: "IMT cellular networks; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)".
- [i.37] ETSI EN 302 064 (2.1.0): "Wireless Video Links operating in the 1,3 GHz to 50 GHz frequency band; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.38] 3GPP2 C.S0010-D (V1.0): "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Base Stations".
- [i.39] ETSI EN 301 908-19: "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 19: OFDMA TDD WMAN (Mobile WiMAX™) TDD User Equipment (UE)".
- [i.40] ETSI EN 301 908-20: "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 20: OFDMA TDD WMAN (Mobile WiMAX™) TDD Base Stations (BS)".

- [i.41] ETSI EN 300 440: "Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonized Standard covering the essential requirements of article 3.2 of the Directive for 2014/53/EU".
- [i.42] ETSI EN 300 328: "Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.43] ETSI EN 303 203 (V2.1.1): "Short Range Devices (SRD); Medical Body Area Network Systems (MBANSs) operating in the 2 483,5 MHz to 2 500 MHz range; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.44] ETSI EN 301 559: "Low Power Active Medical Implants (LP-AMI) operating in the frequency range 2 483,5 MHz to 2 500 MHz Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.45] ETSI EN 301 908-16 (V4.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 16: Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (UE) covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.46] ETSI EN 301 908-17 (V4.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 17: Harmonized EN for IMT-2000, Evolved CDMA Multi-Carrier Ultra Mobile Broadband (UMB) (BS) covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.47] ECC Report 174: "Compatibility between the mobile service in the band 2500-2690 MHz and the radiodetermination service in the band 2700-2900 MHz".
- [i.48] ECC Report 219: "Characteristics of PMSE digital video links to be used in compatibility and sharing studies".
- [i.49] ETSI EN 302 625 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); 5 GHz BroadBand Disaster Relief applications (BBDR); Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.50] ETSI EN 301 893 (V1.8.1): "Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.51] ETSI EN 302 502 (V1.2.1): "Broadband Radio Access Networks (BRAN); 5,8 GHz fixed broadband data transmitting systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.52] ETSI EN 300 674-1 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band; Part 1: General characteristics and test methods for Road Side Units (RSU) and On-Board Units (OBU)".
- [i.53] ETSI EN 302 217 (All parts): "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas".
- [i.54] ETSI EN 302 217-3 (V2.2.1), annex UBa.2: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 3: Equipment operating in frequency bands where both frequency coordinated or uncoordinated deployment might be applied; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.55] ETSI EN 302 729: "Short Range Devices (SRD); Equipment for Detection and Movement; Level Probing Radar (LPR) equipment operating in the frequency ranges 6 GHz to 8,5 GHz, 24,05 GHz to 26,5 GHz, 57 GHz to 64 GHz, 75 GHz to 85 GHz; Harmonised Standard covering essential requirements of article 3.2 of the Directive 2014/53/EU".

- [i.56] ETSI EN 303 135 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Coastal Surveillance, Vessel Traffic Services and Harbour Radars (CS/VTS/HR); Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.57] ETSI EN 302 372: "Short Range Devices (SRD); Equipment for Detection and Movement; Tank Level Probing Radar (TLPR) operating in the frequency bands 5,8 GHz, 10 GHz, 25 GHz, 61 GHz and 77 GHz; Harmonised Standard covering essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.58] ETSI EN 302 326: "Fixed Radio Systems; Multipoint Equipment and Antennas".
- [i.59] ERC/REC 25-10: "Frequency ranges for the use of temporary terrestrial audio and video sap/sab links (incl. ENG/OB)".
- [i.60] ETSI EN 302 288: "Short Range Devices; Transport and Traffic Telematics (TTT); Short Range Radar equipment operating in the 24GHz range; Harmonized Standard covering essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.61] ERC/REC 70-03: "Relating to the use of Short Range Devices (SRD)".
- [i.62] ECC/REC/(09)01: "Use of the 57 - 64 GHz frequency band for point-to-point fixed wireless systems".
- [i.63] ETSI EN 305 550: "Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.64] ETSI EN 302 567: "WAS/RLAN systems; Multiple-Gigabit WAS/RLAN equipment operating in the 60 GHz band; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.65] ETSI EN 302 686: "Intelligent Transport Systems (ITS); Radiocommunications equipment operating in the 63 GHz to 64 GHz frequency band; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.66] ETSI EN 301 091: "ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Technical characteristics and test methods for radar equipment operating in the 76 GHz to 77 GHz band".
- [i.67] ETSI EN 302 264: "Short Range Devices; Transport and Traffic Telematics (TTT); Short Range Radar equipment operating in the 77 GHz to 81 GHz band; Harmonized Standard covering essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.68] ECC Decision (15)05: "The harmonised frequency range 446.0-446.2 MHz, technical characteristics, exemption from individual licensing and free carriage and use of analogue and digital PMR 446 applications".
- [i.69] Recommendation ITU-R SM.332-4: "Selectivity of receivers".
- [i.70] Merill I. Skolnik, "Introduction to radar systems", McGraw-Hill Edition, 2001.
- [i.71] ISO/IEC 7498-1: "Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model".
- [i.72] 2008/477/EC: "Commission Decision of 13 June 2008 on the harmonisation of the 2500 - 2690 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community (notified under document number C(2008) 2625) (Text with EEA relevance)".
- [i.73] ERC report 38: "Handbook on Radio Equipment and Systems. Video links for ENG/OB use".
- [i.74] ECC Report 204: "Spectrum use and future requirements for PMSE".
- [i.75] ECC Report 172: "Broadband Wireless Systems Usage in 2300-2400 MHz".

- [i.76] ECC Report 110: "Compatibility studies between Broad-Band Disaster Relief (BBDR) and other systems".
- [i.77] ECC Report 101: "Compatibility studies in the band 5855– 5925 MHz between Intelligent Transport Systems (ITS) and other systems".
- [i.78] ECC Report 173: "Fixed Service in Europe".
- [i.79] ERC REC (14)01: "Radio-frequency channel arrangements for high capacity analogue and digital radio-relay systems operating in the band 5925 to 6425 MHz".
- [i.80] ECC REC (02)06: "Preferred channel arrangements for digital Fixed Service Systems operating in the frequency range 7125-8500 MHz".
- [i.81] ITU-R Radio Regulation.
- [i.82] ETSI ES 202 131: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band using spread spectrum modulation techniques and 5 GHz high performance RLAN equipment; Specification of Reference Receiver Performance Parameters for Spectrum Planning".
- [i.83] ETSI EN 302 065 (All parts): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.84] ETSI EN 300 086: "Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [i.85] IEEE 802.11™: "IEEE Standard for Information technology--Telecommunications and information exchange between systems Local and metropolitan area networks--Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".
- [i.86] IEC 61000-4-3: "Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test".
- [i.87] ERC REC (14)02: "Radio-frequency channel arrangements for high, medium and low capacity digital fixed service systems operating in the band 6425 to 7125 MHz".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

applicable interferers: interferers to be tested for interferer signal handling

interferer signal handling: capability of the receiver to operate as intended in coexistence with interferers

performance criterion: metric used to evaluate the performance of the device

receiver parameter: characteristic of the receiver that is tested

user manual: end user documentation to be included with the device

3.2 Symbols

For the purposes of the present document, the following symbols apply:

A_{lin}	attenuation (linear)
B_{chan}	bandwidth of the radio service
B_{CW}	bandwidth of CW signal
dB	decibel
Hz	Hertz
m	metre
P_{CW}	power of the CW signal
PSD(f)	power spectral density of signals for that radio service
P_{tx}	power of the radio service

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ALD	Assistive Listening Devices
AWG	Arbitrary Waveform Generator
AWGN	Additive White Gaussian Noise
BBDR	Broad Band Disaster Relief
BER	Bit Error Rate
BFWA	Broadband Fixed Wireless Access
BMA	Building Material Analysis
BPSK	Binary Phase Shift Keying
BS	Base Station
CDMA	Code Division Multiple Access
CEPT	Conférence des administrations Européennes des Postes et Telecommunications
CW	Continuous Wave
DAA	Detect And Avoid
DAB	Digital Audio Broadcast
DAC	Digital to Analog Converter
DCS	Digital Cellular System
DECT	Digital Enhanced Cordless Telecommunication
DUT	Device Under Test
ECC	Electronic Communications Committee
E-GSM	Extended GSM
EIRP	Effective Isotropic Radiated Power
EMC	ElectroMagnetic Compatibility
ER-GSM	Extended Railway GSM
ERM	Electromagnetic compatibility and Radio spectrum Matters
E-UTRA	Enhanced Universal Terrestrial Radio Access
FDD	Frequency Division Duplex
FIR	Finite Impulse Response
FM	Frequency Modulation
GPR	Ground Probing Radar
GSM	General System for Mobile communication
IEEE	Institute of Electrical and Electronics Engineers
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical
ISO	International Organization for Standardization
ITS	Intelligent Transport Systems
ITU	International Telecommunications Union
LAN	Local Area Network
LBT	Listen Before Talk
LLC	Logical Link Control
LPR	Level Probing Radar
LTE	Long Term Evolution
MAC	Medium Access Control
MBANS	Medical Body Area Network System
MOB	Man Over-Board

ND	Noise and Distortion
NLOS	Non Line-Of-Sight
OSI	Open System Interconnect
PAN	Personal Area Network
PCS	Personal Communications Service
PCS	Physical Coding Sublayer
PER	Packet Error Rate
P-GSM	Primary GSM
PHR	PHY Header
PHY	PHYSical layer
PMA	Physical Medium Attachment sublayer
PMD	Physical Medium Dependent sublayer
PMR	Private Mobile Radio
PMSE	Program Making and Special Events
PPDR	Public Protection and Disaster Relief
PSD	Power Spectral Density
R&TTE	Radio and Telecommunications Terminal Equipment
RCS	Radar Cross Section
RED	Radio Equipment Directive
RF	Radio Frequency
RFID	Radio Frequency Identification
R-GSM	Railway GSM
RRC	Root Raised Cosine
SECEDED	Single Error Correction Double Error Detection
SND	Signal, Noise and Distortion
SNR	Signal to Noise Ratio
SRD	Short Range Device
SRR	Short Range Radar
STF	Special Task Force
T-DAB	Terrestrial DAB
TDD	Time Division Duplex
TLPR	Tank Level Probing Radar
TTT	Transport and Traffic Telematics
UE	User Equipment
UMTS	Universal Mobile Telecommunication System
UTRA	Universal Terrestrial Radio Access
UWB	Ultra-WideBand
WiMAX	Worldwide Interoperability for Microwave ACCess
WLAN	Wireless Local Area Network
WPR	Wall Probing Radar

4 Purpose of receiver parameters

The intention of article 3.2 of Directive 2014/53/EU [i.1] in relation to a receiver is explained in recitals 10 and 11 of the Directive which state:

*"...in the case of a receiver, it [receiving device] has a level of performance that allows it to **operate as intended and protects it against the risk of harmful interference, in particular from shared or adjacent channels**, and, in so doing, supports improvements in the efficient use of shared or adjacent channels."*

ETSI EG 203 336 [i.3] translates these high level essential requirements into technical specifications by defining a number of receiver parameters in clause 5.3 of ETSI EG 203 336 [i.3].

In order to specify performance of the receiving device, ETSI EG 203 336 [i.3] uses terms like 'level of performance' and 'a given degradation'. Therefore, quantified performance criteria are required. Clause 5 of the present document discusses these performance criteria in the context of UWB applications. Clause 6 then considers the receiver parameters in ETSI EG 203 336 [i.3] and proposes more suitable receiver parameters for UWB applications.

As a result, the definition of receiver parameters should ensure the proper operation of receiving devices in an environment co-located with other radio equipment.