



Consultation Paper on the
General User Radio Licence (GURL)
Guideline
For National Type Approval Framework
&
Short-range Radiocommunications Devices
(SRDs)

INVITING PUBLIC COMMENT AND INPUT

1ST November 2019

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CONSULTATION FEEDBACK INFORMATION

The Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR) hereby announces the introduction of the **General User Radio Licence (GURL) guideline for National Type Approval Framework and Short - range Radiocommunications Devices (SRDs) for the Republic of Vanuatu**. The TRBR welcomes and invites comments and feedback to this consultation document from all interested parties.

The successful introduction of this proposed new guideline for telecommunications, radiocommunications and broadcasting technical conditions and radiation limits for SRDs and unlicensed equipment will involve many stakeholders, including some that are not participants in the telecommunications and broadcasting sector. TRBR is consulting directly with many stakeholders to ensure they are aware of and understand the interference issues that can be generated by this type of devices/equipment if they are not operating within the specifications specified in this Guideline.

We would appreciate your provision of information to be clear by quoting the main corresponding sections and sub sections when providing your comments:

- More general comments on the consultation document should also be indicated accordingly.
- In the interests of transparency, TRBR will make public all or parts of any submissions made in response to this Consultation Document unless there is a specific request to treat all or part of a response in confidence. If no such request is made, TRBR will assume that the response is not intended to be confidential. TRBR will evaluate requests for confidentiality according to relevant legal principles.
- Respondents are required to clearly mark any information included in their submission that they consider confidential. They shall provide reasons why that information should be treated as such. Where information claimed to be confidential is included in a submission, respondents are required to provide both a confidential and a non-confidential version of their submission. TRBR will determine, whether the information claimed to be confidential is to be treated as such, and, if so, will not publish that information. In respect of the information that is determined to be non-confidential, TRBR may publish or refrain from publishing such information at its sole discretion.
- TRBR has set out a number of questions at the end of this consultation paper. These are summarized in Section 4. Wherever possible, please refer to these questions if you have specific questions to provide us with your queries.
- TRBR will accept comments in English, French or Bislama;
- If comments are submitted in printed format, they must be submitted on A4 paper accompanied, wherever possible, by a disk containing the comments or in electronic format.

- Comments on this consultation document should be provided to TRBR via the following means:

Email address consultation@trbr.vu

Posted or hand delivered to:

Public Input – Consultation Paper on Draft Telecommunications and Radiocommunications Type Approval and Conformity to Standards Regulation

Telecommunications, Radiocommunications and Broadcasting Regulator

P O Box 3547, Port Vila, Vanuatu;

- The deadline for public Comments is 4:30pm, 1 of December 2019. Please note that TRBR's consultation timeframe in accordance with TRBR's Consultation Guidelines is normally 28 days. For this consultation, TRBR considers a 4 weeks consultation period is necessary.
- For any phone enquiries regarding this Consultation document, please call the following numbers:

(678) 27621 or (678) 27487;

All Comments will be reviewed by TRBR, and TRBR will consider every comment submitted when finalizing its report or decision. For transparency, a record of every comment received will be made available for public information, unless comments are labelled 'In Confidence'.

For more information about TRBR's Consultation Guidelines, please visit the following website;

<https://www.trr.vu/index.php/en/public-register/consultations/2016>;

You are welcome to visit our website <https://www.trbr.vu> for more details on the latest developments in the telecommunication services industry and other related matters.

1.0 INTEPRETATION

The 'Key' terms used in this draft Guideline are either already defined in the Telecommunications, Radiocommunications and Broadcasting Regulation Act No. 30 of 2009 as amended by amendment 22 of 2018 (the Act) or otherwise are defined in the draft Guideline itself.

2.0 NTRODUCTION

2.1 Background

Radio frequency spectrum is a natural asset and national resource with limited amount to provide radiocommunications, which have to be managed properly for effective and fair utilization. The demand for application of frequencies is growing daily and it is a predominant need of all equipment, which are in operation using energy of electromagnetic waves. Airplanes, ships, satellites, radars, cell phones, sound and TV broadcasters, TV receivers, radio transceivers, microwave links, radio trunk, cordless phones, handsets, wireless apparatus, home appliance, industrial and medical equipment, weather forecasters and many other applications are managed internationally and nationally to take benefit of spectrum.

Section 7 of the Act prescribes the general functions and powers of TRBR; one of which is Paragraph 7 (4) (f) of the Act states that *"imposing restrictions or limitations upon the importation, sale or use of any equipment used or likely to be used in connection with radiocommunications or telecommunications"*.

TRBR is proposing that a GURL for SRDs technical specifications guideline be developed, to establish a guide for SRD users in Vanuatu to overcome any present or potential interference issues on licenced frequency bands. TRBR proposes that all SRDs and like equipment that is intended to be imported into, or to be manufactured and to be used in Vanuatu, must be in compliance with this Guideline.

This consultation paper has been developed to provide all stakeholders and, particularly, licensees, manufacturers, ICT equipment importers, radio dealers, sales outlets, users and consumers, and other interested individuals the opportunity to consider TRBR's proposal, and respond and contribute to the development of a short range technical specification guideline that is fit for purpose for Vanuatu.

TRBR believes that it is important, and essential, to have this Guideline developed through a collective and extensive consultation process to capture the views of all stakeholders.

Accordingly, the objective of this Public Consultation paper is to provide stakeholders with the opportunity to review TRBR's proposal and current thinking on this issue, and make all appropriate comments to TRBR that it needs to consider in respect of the content and implications of the proposed Guideline detailed herein.

The consultation paper is also available on TRBR's website (www.trbr.vu)

2.2 Objective and Purpose

The primary objectives to be achieved with this Guideline **includes the following:**

- To allow the development of new services to meet governmental and non-governmental demand for radio services;
- To manage the radio spectrum taking into account the governmental requirements and the needs of the various commercial sectors;
- To harmonize spectrum use with international as well as regional developments;
- To stimulate technological innovation and competitiveness;
- To support economic growth, create employment and to promote general welfare;
- To support national security, defense and emergency services; and
- To help guide manufacturers and resellers in the development and reselling of SRD/GURL devices.

In addition, to protect the interference-free operation of existing stations and to provide opportunities for the introduction of new applications, there is a need to clarify the usage method of each individual frequency band. Some of the supporting operational regulations, frequency band plans, frequency channel arrangements and other technical conditions that are required for use of frequency bands in National Table of Frequency Allocation (NTFA) are provided separately in this document.

The following main references have been studied and used for drafting of assignment table:

- National frequency allocation plan,
- Various series of ITU-R Recommendations,
- Existing usages,
- Documents of different well-known standardization organizations, and
- The reliable information about global trends, products and advanced technologies.

This Consultation Document (“document”) seeks stakeholders’ feedback on this proposed draft Guideline. A draft of the proposed guideline, titled DRAFT General User Radio Licence (GURL) Guideline for National Type Approval Framework & Short-range Radiocommunications Devices (SRDs), is provided in Annex A.

3.0 REGULATORY IMPACT ASSESMENTS

The Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR) under Section 7 of the Telecommunications, Radiocommunications and Broadcasting Regulation Act No. 30 of 2009, as amended by Amendment 22 of 2018 (the Act) has the authority and mandate to regulate telecommunications, radiocommunications and broadcasting. This includes the management of radio frequency spectrum (spectrum) in order to promote national social and economic development.

The TRBR has the responsibility to develop spectrum management strategies and plans that meet government policies, provide safety to the telecommunications, radiocommunications and broadcasting industry and conform to international treaty obligations of the International Telecommunications Union (ITU), Radio Regulations (RR) and recommendations from the Asia Pacific Telecommunity (APT). In addition, it is important to recognize that the Radio frequency spectrum is a limited natural asset and national resource to provide radiocommunications, therefore it has to be managed properly for effective and fair utilization.

The National Table of Frequency Allocations (NTFA) constitutes the document of regulation for the frequency allocations and the frequency utilization in Vanuatu by legal entities or persons, which are engaged in ordering, developing, using and purchasing radio-communication equipment as well as the apparatus utilizing electromagnetic energy. The Table, however, does not present any right for a frequency band use (or a specific frequency) for development, production, import and operation of the relevant equipment without issuance of duly completed authorization by the Regulator who is empowered for this duty under section 7 of the Act.

4.0 CONSULTATION QUESTIONS

Q1: Do you support the draft guideline as it has been drafted?

Q2: If the answer to Q1 is “no”, please indicate any alternative or modified approaches that you would prefer to see in the draft Guideline; including, if possible, the text that might appear in the draft Guideline instead of what is currently there. Please provide justification for your view.

Q3: If the answer to Q1 is “no” because a topic has not been covered or not covered to the extent that you think it should be, please indicate the additional coverage and text that you propose to be included in the draft Guideline. Please state the reason for your proposal.

Q4: Do you agree with the list of standards included in this guideline and, if not, what other standards should be added or removed and why?

Q5: Do you agree with the list of technical conditions and radiation limits included in this guideline and, if not, what other technical conditions and radiation limits should be added or removed and why?

Q6: Do you agree with the list of frequency ranges included in chapter 1 to 10 of this Guideline. If not, what other frequency range should be added or removed and why?

Q7: Do you agree with the list of short-range devices (SRDs) included in chapter 1 to 10 of this Guideline. If not, what other SRDs should be added or removed and why?

Q8: Do you agree with the name of class licences in special section (§) 1.5.3. included in this guideline and, if not, what other frequencies should be added or removed and why?

Q9: Do you agree with the applications listed in special section (§) 1.5.4. included in this guideline and, if not, what other frequencies should be added or removed and why?

Q10: Please state any other comments and/or suggestions related to this guideline, along with any justifications or comments you wish to make?

Annex A
DRAFT General User Radio Licence (GURL)
Guideline
For National Type Approval Framework
&
Short-range Radiocommunications Devices
(SRDs)

Vanuatu
November 2019

PREFACE

Radio frequency spectrum is a natural asset and national resource with limited amount to provide radiocommunications, which have to be managed properly for effective and fair utilization. The demand for application of frequencies is growing daily and it is a predominant need of all equipment which are in operation using energy of electromagnetic waves. Airplanes, ships, satellites, radars, cell phones, sound and TV broadcasters, TV receivers, radio transceivers, microwave links, radio trunk, cordless phones, handsets, wireless apparatus, home appliance, industrial and medical equipment, weather forecasters and many other applications are managed internationally and nationally to take benefit of spectrum.

National Table of Frequency Allocations (NTFA) Plan constitutes the document for regulation of the frequency allocations and the frequency utilization in Vanuatu by legal entities or persons which engaged in ordering, development, using and purchasing radiocommunication equipment as well as those apparatus utilizing electromagnetic energy. The Table, however, does not present any right for a frequency band use (or a specific frequency) for development, production, import and operation of the relevant equipment without issue of duly completed authorization by appropriate national body, which is empowered for this duty by the Government of Vanuatu.

To protect the interference-free operation of exiting stations and to provide opportunity for introduction of new applications, there is need to clarify the usage method of each individual frequency band. Some of the supporting operational regulations, frequency band plans, frequency channel arrangements and other technical conditions that are required for use of frequency bands in the NTFA provided separately in this document. The following main references have been studied and used for drafting of the assignment table:

- National Frequency Allocation Plan
- Different series of ITU-R Recommendations,
- Existing usages,
- Documents of different well-known standardization organizations,
- Reliable information about global trends, products and advanced technologies,

Chapter one includes ten Class radio licenses, chapter two provides frequency plans for Private Mobile Radio (PMR), IMT and Space Services and chapter three provides technical and additional operational regulations for radio amateurs. Frequency channel arrangement for point-to-point radio relay systems are similar to ITU-R Recommendations F-series that are provided in accompanied Excel file. Operational regulations and technical conditions for other types of radiocommunication applications are available in other regulatory sources that may be found in TRBR portal and relevant publication.

This document is deemed as part of National Frequency Plan.

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CHAPTER 1

Short Range Devices (SRD)

1. Specific and Non-specific SRDs

1.1. Description

The operation distance of radiocommunication devices could be controlled by device radiation, even to near proximity. Because of small battery-size and simple features, low power device circuitry could be miniaturized to small size. Many applications take advantage of low-power low-price and short-range specification of these devices, and currently extreme numbers of short range devices (SRDs) are in use in the frequency bands that are already allocated to the radiocommunication services. Wideband data transmission, radio-control, object identification, metering, object tracing, wireless microphones, hearing aids, short-range radars, movement detectors, active sensors and many more others are some example applications. The low power characteristics of these devices in combination with interference mitigation techniques, either remove interference thread for radiocommunication or make it ignorable after taking a short distance from transmitter. The license-free nature, usefulness, low price, long life, small size and flexibility of low power low interference devices cause wide use of SRDs. Although the use of these devices began in the ISM frequency bands but extended to the other frequency bands quickly. In fact, in point of spectrum management for SRDs' radiation is tolerable if their interference to radiocommunications gets vanished in short distance.

The radiated energy of some SRDs is comparable with the environment noise level and cannot make harmful interference in practice. The usage type of these SRDs does not make difference in point of spectrum management, therefore named non-specific SRDs in this Guideline. The field strength level of non-specific SRDs were tabulated in Schedule 1.1 and displayed in Figure 1.1. SRD applications which are specifically producing higher field strengths, are classified as specific SRDs in followed sections. Use of some types of specific SRDs in some cases is subject to obtaining individual permit from the Regulator, just for prevention of interference to radiocommunication services or official purpose. The procedure for obtaining of permits explained in §1.5.2.

In addition to provisions related to non-specific SRDs, several separate technical specifications and operational conditions provided for specific SRDs where their list is given in §1.5.3.

1.2. Definitions

- **§:** Special Section
- **AFA (Adaptive Frequency Agility):** A state at which the device changes its RF carrier frequency to a new frequency in circular manner for preventing or reducing interference impact automatically;
- **ALD (Assistive Listening Devices):** Low power wireless headset devices that receives sounds of distant microphone;
- **APC (Automatic Power Control):** That is called also ATPC (Automatic Transmit Power Control) or TPC (Transmit Power Control), is capability of transmitter to reduce radiated power to the minimum required value automatically. APC expedites a return channel to report quality of received RF signal to transmitter by receiver;
- **Call sign:** An identity assigned to stations by TRBR in accordance with the ITU Radio Regulations Article 19;

- **Class License:** A license that authorize any citizen or group of citizens to utilize given frequency band in compliance with technical and operational conditions cited in the license text, without need to apply for individual radio license by referring to the Regulator. Utilization of spectrum under a class license is free and only a single-pay registration-fee may be required, if clearly required in relevant class license;
- Operators under a class license, authorized to use the given frequency band in the license with equal rights without any protection request;
- **Communication channel:** A logical or radio frequency channel providing communication;
- **Cordless telephone (CT):** A telephone system in which the two-way communication between fixed part and handset is made via radio waves;
- **DAA (Detect and Avoid):** DAA is a set of technologies designed to avoid interference between a given emitter and the wireless environment;
- **dBc (dB carrier):** The value in dB to the power of non-modulated carrier. In case if there is no specific carrier frequency or if it is not distinguishable (like some digital modulation schemes), the equivalent reference for dBc is the value in dB to the average power of radio frequency signal;
- **DECT:** Digital Enhanced Cordless Telecommunications, standardized by ETSI;
- **DSSS (Direct Sequence Spread Spectrum):** A modulation scheme in which the baseband data stream is being combined with a high-speed code, in a way that to spread the original data spectrum into a very big bandwidth;
- **EAS (Electronic Article Surveillance):** A technological method for preventing shoplifting from retail stores, pilferage of books from libraries or removal of properties from office buildings;
- **Equivalent isotropically radiated power (e.i.r.p.):** The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain);
- **ERP:** (effective radiated power) (in a given direction): The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction;
- **FHSS (Frequency Hopping Spread Spectrum):** A modulation scheme in which the RF carrier frequency is being changed, after a short dwelling time, to a new frequency provided by a frequency synthesizer that derived by a pseudo random code in a cyclic manner;
- **Flying model:** In this text, means an object made by various materials being smaller than its real dimension and capable to fly. These models are usually used for playing, sport, training, search, rescue or research purposes;
- **Fractional bandwidth:** Is the ratio of -10 dB bandwidth to the centre frequency of bandwidth;
- **Frequency Agility:** Capability of a radio device to change RF channel in working frequency band, quickly;
- **Harmful Interference:** Means interference which impairs the functioning of a radio communications or which materially degrades or obstructs or repeatedly interrupts radio communication.
- **Indoor:** The interior space of a place bounded with walls and ceiling wherein the level of propagated field from inside to outside fall down to the level of nominal local noise level at immediate adjacent outside;
- **Industrial, Scientific and Medical (ISM):** applications (of radio frequency energy): Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications;
- **Interference:** The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy;

- **IoT:** Internet of things that is classified into IMT IoT and Non-IMT IoT, further;
- **Industrial, Scientific and Medical (ISM) applications (of radio frequency energy):** Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications.
- **KNX:** is a standard for home control automation through bus devices (sensors and actuators) that are connected via RF for the exchange of information.
- **LBT (Listen Before Talk):** A state at which the device searches for and switches operation to an interference-free/unoccupied RF channel automatically;
- **LDC (Low Duty Cycle):** Duty cycle less than 5% in any second and 0.5% in any hour in which continuous transmission of signal shall not exceed 5 milliseconds;
- **LT (Location Tracking):** Tracking location of objects buried in depth or hidden somewhere. There are two types LT1 and LT2;
- **MAN:** Municipal area networks;
- **MBANS:** Medical Body Area Network System;
- **Non-specific SRD:** SRD with extremely low power radiation on the corresponding working frequency that there is no restriction on the type of application;
- **Outdoor:** The open space outside the buildings, wherein fields stronger than noise level would propagate, irrespective from transmitter location;
- **Processing Gain:** Improvement factor of signal-to-noise ratio (SNR), in dB, due to spreading spectrum techniques;
- **Radio control model:** Moving models controllable with radio device remotely on air, ground, on or beneath water. Generally models are classified into three aerial, surface and subsurface types. These models are usually in the different form of vehicles, vessels (steam or motor ships or boats), robots, submarines or aircrafts;
- **Regulator:** Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR);
- **RFID (Radio Frequency Identification):** Identification of objects having tags stuck to them by means of wireless reader that reads stored exclusive identification code;
- **RFID Tag:** An electronic sticker or label capable to store identification code, being actuated by corresponding RFID reader and to transmit RF signal containing stored information;
- **RLAN:** Radio Local Area Network;
- **SAR:** Synthetic Aperture Radar;
- **SDR:** Software defined radio; a radio device that its radio frequency specification, e.g. operational frequency, bandwidth, transmitting power, modulation, etc. could be changed by firmware upgrade, without need to hardware alternation;
- **Short Range Device (SRD):** A Radio Device, usually low power that has no interference effect or its interference is limited to only few meters from transmitter. Use of SRDs is subject to not causing harmful interference and no claim for protection against interference of radiocommunication transmitters;
- **Spurious emission:** Emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions;
- **SSID:** Service Set Identifier;

- **Tag Reader:** A radio device consisting from antenna, RF filter and source that for reception stored data in tags, transmits RF signal. Wireless tags transmit stored information to the reader, once actuated by reader transmitter. An RFID reader device has various tasks including: transmission of RF signal toward tags for actuating wireless tags and providing enough energy for driving of passive/semi-passive tags to respond, ciphering of transmitted information to tags and de-ciphering of received information from tags;
- **TLPR:** Tank Level Probing Radar;
- **TPC (Transmitter Power Control):** Controlling of transmitter power as function of required communication quality (usually autonomous);
- **TTT:** Transport and Traffic Telematics;
- **ULE:** is an Ultra-Low Energy DECT standard used to design wireless sensor and actuator networks for smart home applications such as home automation, home security and climate control.
- **ULP-AID ((Ultra Low Power) ULP active Animal Implantable Devices):** The low power active implants for animal care;
- **Ultra-wideband technology (UWB):** Technology for short-range radiocommunication, involving the intentional generation and transmission of radio-frequency energy that spreads over a very large frequency range, which may overlap several frequency bands allocated to radiocommunication services. Devices using UWB technology typically have intentional radiation from the antenna with either a –10 dB bandwidth of at least 500 MHz or a –10 dB fractional bandwidth greater than 0.2;
- **WAN:** Wide area networks;
- **Wireless Home Area Networks (WHAN(s)):** Are wireless communication networks interconnecting devices centered around an individual person's home, these cover radio transmitters which provide either uni-directional or bi-directional communications and have low capability of causing Harmful Interference to other radio equipment. WHANs are used with either integral, dedicated or external antennas, and all modes of modulation are permitted subject to relevant standards. Applications include, but not exhaustively, lighting systems, security alarm systems, and energy management systems, health monitoring and alert systems.
- **WPR/GPR (Wall Probing Radar/Ground Probing Radar):** Radar system imaging objects inside the wall or under the ground to some certain depth;
- **ZigBee:** is a technology that uses the globally available 2.4 GHz frequency band. It enables wireless applications using a standardized set of high-level communication protocols sitting atop low-power digital radios.
- **Z-wave:** is a wireless, RF-based communications technology standard that defines a protocol designed for short range, two-way mesh topology automation networks. It addresses specifically the control, monitoring and status reading applications in residential environments.

Note: Terms that are not defined in this Guideline have same meaning as provided in other radio regulations and in national table of frequency allocations;

1.3. General Requirements and Considering

- 1.3.1. The worldwide needs to daily and freely use of low-cost SRDs in many applications;
- 1.3.2. The possibility to provide a national regulation and technical specifications having good conformity with existing common standards applicable for low power low interference devices while wide difference of national regulations and technical specifications of other countries;

- 1.3.3. SRDs are utilizing frequency bands in the NTFA on shared basis with radiocommunication services and also with themselves while having minimum binding to the radiocommunication services;
- 1.3.4. SRDs are able to provide enough in-band protection to radiocommunication services by means of interference mitigation techniques and low radiation power, despite the probability to occur interference in near distance around SRDs;
- 1.3.5. The probability to occur harmful interference if some certain type of SRDs were used by non-experts or non-professional users and therefore need to have a controlling mechanism for preventing of such uses;
- 1.3.6. The possibility for minimizing importing, exporting and distribution of non-compliant SRDs by restriction of SRDs importing to licensed importers and exporters;
- 1.3.7. The necessity for simplification of licensing procedure, compared to traditional procedure for radio licensing, for SRDs that are subject to TRBR's permit before usage;
- 1.3.8. The usefulness of separation between regulation and technical specification of non-specific general SRD from those of specific;

1.4. Technical Specification and Operational Regulation of Non-Specific SRDs

- 1.4.1. Use of non-specific SRDs that meet non-conditional general limits of Schedule 1.1 does not require application for individual radio license but obtaining of certificate of compliance from TRBR is necessary;
- 1.4.2. Use of non-specific SRDs meeting radiation limits and technical conditions of Schedule 1.2 does not require individual radio license, however, the device conformance shall be approved by TRBR;
- 1.4.3. Use of non-specific SRDs in accordance with §1.4.1 and §1.4.2 is subject to not causing harmful interference and not claiming protection from other SRDs and radiocommunication stations;

1.5. General Technical Specification and Operational Regulation of Specific SRDs

- 1.5.1. Use of SRDs having specific application in the schedules 1.3 to 1.11 that meet radiation limits and operational regulations in Schedules, does not require application for individual radio license, except those items in the schedule that conditioned on a permit from TRBR;
- 1.5.2. Applicants who wish to use SRDs that are conditioned on a permit from TRBR in the schedules 1.3 to 1.11, should not only assure from the approved type of device, but also submit an official application form to TRBR, attached with device information. In response, TRBR would issue a permit if TRBR is satisfied that the SRDs meets the conformity standards;

1.5.3. List of the latest individual Class Licenses containing technical specification and operational regulation of SRDs, is provided in following table for various applications:

Name of Class Licence	Section Number
Class license, Model Radio Control (RC), Technical Conditions and Operational Regulation	2
Class license, Radio Frequency Identification Devices (RFID), Technical Conditions and Operational Regulations	3
Class license, Technical Conditions and Operational Regulation of Ultra-wideband Technology (UWB) in the Frequency Range Below 10.6 GHz	4
Class license, Citizen Band Radio Station License	5
Class license, Technical Specifications and Operational Conditions of Low Power Handsets and Repeater Stations in the Frequency Band 4446 MHz (PMR466)	6
Class license, Cordless Telephones (CT), Technical Conditions and Operational Regulation	7
Regulation for Short Range Point to Point Wireless Links in Fixed radiocommunication Service, in the frequency band 24 GHz (24.0-24.25 GHz)	8
Class license, Technical Specification and Operational Regulations of Short-Range Point to Point Links in the 60 GHz band, 57 GHz to 64 GHz	9
Class License on Utilization of the Frequency Bands 2400-2483.5 MHz, 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz in the Access Networks	10

1.5.4. List of the frequency bands as well as relevant regulations and some key technical specifications of SRDs with various applications are provided in following schedules:

Application	Schedule Number
Inductive applications including for example car immobilisers, alarm systems, animal identification, proximity sensors, anti-theft systems, cable detection, automatic road tolling, data transfer to handheld devices (e.g. NFC) and wireless voice links and wireless control systems that use electromagnetic induction for communication	1.3
Wideband short-range data transmission systems	1.4
Railway applications and radar sensor at railway level crossing ⁽¹⁾	1.5
Transport and traffic telematics (TTT)	1.6
Applications for detecting movement and alert	1.7
Alarm application	1.8
Tracking, Tracing and Data Acquisition	1.9
Radio microphone, assistive listening devices (ALD), wireless audio and multimedia streaming systems	1.10
Medical implants and their associated peripherals	1.11
Technical Conditions of SRDs for Non-IMT IoT	1.12

⁽¹⁾: Utilization frequencies provided in Schedule 1.5 for national railway network is subject to advance notice to TRBR.

1.6. The Provisions of Importing and Manufacturing

- 1.6.1. Importing, purchasing for selling or production for selling of those SRDs in this Guideline states that their use requires obtaining TRBR permit, restricted to licensees who have license for importing, purchasing/selling, and production/selling of radiocommunication equipment;
- 1.6.2. Importer of a device regulated by this Class radio license must assure from approval of device compliance with determined standards before importing that device;
- 1.6.3. Selling of SRDs, regulated by this Class radio license, by retailers holding business authorization, is permitted under the full responsibility of one of the owners of importing, purchasing/selling, and production/selling of radiocommunication equipment license, subject to advance TRBR notification via Annex 1.1 notice form;
- 1.6.4. Interested individuals may manufacture non-specific SRD for their personal use, not more than five devices, subject to conformance with radiation limits provided in Schedule 1.1. Such devices shall not cause interference to other radio devices, and if it does, their operation shall be stopped immediately. Commercial use or advertisement for these devices is forbidden unless a type approval certificate issued for each type of these devices;

1.7. Schedules

Schedule 1.1. General limits for the electrical field strength value of non-specific SRDs

Frequency Band (MHz)	Electric Field Strength Limit ($\mu\text{V/m}$)	Measurement Distance (m)
0.0083 – 0.48	$2400/f$ (kHz)	300
0.48 – 322	500	3
322 – 960	200	3
Above 960	500	3

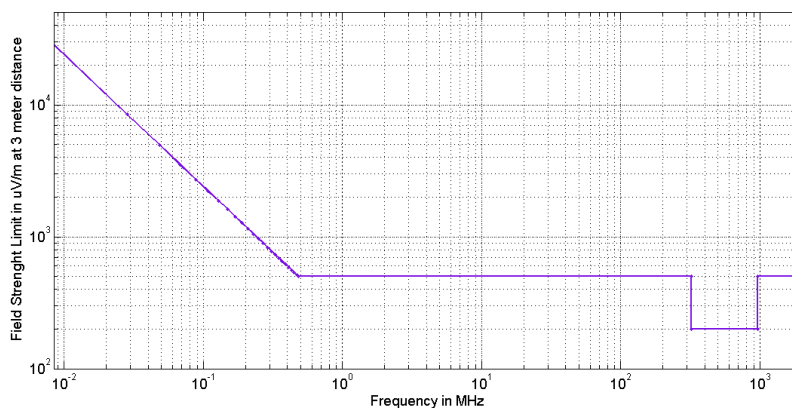


Figure 1.1. General limits for the electrical field strength value of non-specific SRDs

Schedule 1.2. General radiation limits and technical conditions of non-specific SRDs

№	Frequency Bands (MHz)	Field Strength/Radiated Power	Spectrum Access Method/Bandwidth Requirement	Duty cycle	Standard	Notes
1	6.765-6.795	42 dBµA/m at 10 m	-	No requirement	EN 300 330	ISM band based on RR No. 5.150
2	13.553-13.567	42 dBµA/m at 10 m	-	No requirement	EN 300 330	ISM band based on RR No. 5.150
3	26.975-27.283	42 dBµA/m at 10 m 10 mW e.r.p.	-	No requirement	EN 300 330	ISM band based on RR No. 5.150
4	26.99-27	100 mW e.r.p.	≤ 10 kHz	≤ 0.1%	EN 300 220	Shared use by all types of model remote controllers
5	27.040-27.050	100 mW e.r.p.	≤ 10 kHz	≤ 0.1%	EN 300 220	Shared use by all types of model remote controllers
6	27.090-27.100	100 mW e.r.p.	≤ 10 kHz	≤ 0.1%	EN 300 220	Shared use by all types of model remote controllers
7	27.190-27.200	100 mW e.r.p.	≤ 10 kHz	≤ 0.1%	EN 300 220	Shared use by all types of model remote controllers
8	40.660-40.700	10 mW e.r.p.	-	No requirement	EN 300 220	ISM band based on RR No. 5.150
9	169.4-169.475	500 mW e.r.p.	≤ 50 kHz	≤ 0.1%	EN 300 220, ECC/DEC/(05)02	Shared use by meters and wireless hearing aids
10	169.4-169.4875	10 mW e.r.p.	-	≤ 0.1%	EN 300 220, ECC/DEC/(05)02	-
11	169.4875-169.5875	10 mW e.r.p.	-	≤ 0.001% except for 00:00 h to 06:00 h local time where the limit is ≤ 0.1%	EN 300 220, ECC/DEC/(05)02	-
12	169.5875-169.8125	10 mW e.r.p.	-	≤ 0.1%	EN 300 220, ECC/DEC/(05)02	-
13	433.050-434.790	10 mW e.r.p.	-	≤ 10%	EN 300 220	ISM band based on RR No. 5.138
14	433.050-434.790	4 mW e.r.p., - 13 dBm/10 kHz	-	No requirement	EN 300 220	ISM band based on RR No. 5.138
15	863-870	25 mW e.r.p.	≤ 100 kHz for 47 or more channels	≤ 0.1% or LBT	EN 300 220	FHSS
16	863-870	25 mW e.r.p. - 4.5 dBm/100 kHz	-	≤ 0.1% or LBT+AFA	EN 300 220 IEEE 802.15.4	DSSS and other wideband techniques other than FHSS
17	863-870	25 mW e.r.p.	≤ 100 kHz, for 1 or more channels modulation bandwidth ≤ 300 kHz	≤ 0.1% or LBT+AFA	EN 300 220	Narrow /wide-band modulation
18	868-868.6	25 mW e.r.p.	-	≤ 1% or LBT+AFA	EN 300 220	Narrow / wide-band modulation. No channel spacing; however, the whole stated frequency band may be used
19	868.7-869.2	25 mW e.r.p.	-	≤ 0.1% or LBT+AFA	EN 300 220	Narrow / wide-band modulation. No channel spacing; however, the whole stated frequency band may be used
20	869.4-869.65	500 mW e.r.p.	-	≤ 10% or LBT+AFA	EN 300 220	Narrow / wide-band modulation. The whole stated frequency band may be used as 1 channel for high speed data transmission
21	869.7-870	5 mW e.r.p. 25 mW e.r.p.	-	No requirement for 5 mW e.r.p., ≤ 1% duty cycle or	EN 300 220	Narrow / wide-band modulation. No channel spacing; however, the whole stated frequency band may be used

				LBT+AFA for 25 mW e.r.p.		
22	870-876	25 mW e.r.p.	≤200 kHz	≤ 0.1%. For ER-GSM protection (873-876 MHz, where applicable), the duty cycle is limited to ≤0.01% and limited to a maximum transmit on time of 5ms/1s	EN 300 220	-
23	870-875.8	25 mW e.r.p.	≤600 kHz	≤ 1%. For ER-GSM protection (873.0-875.8 MHz, where applicable), the duty cycle is limited to ≤ 0.01% and limited to a maximum transmit on time of 5ms/1s	EN 300 220	-
24	915-921	25 mW e.r.p.	≤200 kHz	≤ 0.1%. For ER-GSM protection (918-921MHz, where applicable), the duty cycle is limited to ≤0.01% and limited to a maximum transmit on time of 5ms/1s	EN 300 220	-
25	915.2-920.8	25 mW e.r.p. except for the channels 916.3, 917.5, 918.7 and 919.9 MHz where 100 mW e.r.p. applies	≤ 600 kHz except for the 4 identified channels where ≤ 400 kHz applies	≤ 1%. For ERGSM protection (918-920.8MHz, where applicable), the duty cycle is limited to ≤0.01% and limited to a maximum transmit on time of 5ms/1s	EN 300 220	-
26	2400-2483.5	10 mW e.i.r.p.	-	No requirement	EN 300 440	ISM band based on RR No. 5.150
32	5725-5875	25 mW e.i.r.p.	-	No requirement	EN 300 440	ISM band based on RR No. 5.150
36	24000-24250	100 mW e.i.r.p.	-	No requirement	EN 300 440	ISM band based on RR No. 5.150
37	57000-64000	100 mW e.i.r.p., a max. transmitter output power of 10 mW, and a power density limited to 13 dBm/MHz e.i.r.p. applies	-	No requirement	EN 305 550	-
38	61000-61500	100 mW e.i.r.p.	-	No requirement	EN 305 550	ISM band based on RR No. 5.138
39	122000-122250	10 dBm e.i.r.p./250 MHz and -48 dBm/MHz at >30° elevation	-	-	EN 305 550	ISM band based on RR No. 5.138
40	122250-123000	100 mW e.i.r.p.	-	No requirement	EN 305 550	ISM band based on RR No. 5.138
41	244000-246000	100 mW e.i.r.p.	-	No requirement	EN 305 550	ISM band based on RR No. 5.138

Schedule 1.3. Radiation Limits and Technical Conditions of Inductive SRDs

Sl. No.	Frequency Bands (kHz)	Field Strength/ Radiated Power	Spectrum Access Method/Bandwidth Requirement	Duty cycle	Standard	Notes
1	9-90	72 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed. Field strength level descending 3 dB/oct at 30 kHz
2	90-119	42 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed
3	119-135	66 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed. Field strength level descending 3 dB/oct at 119 kHz
4	135-140	42 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed
5	140-148.5	37.7 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed
6	3155-3400	13.5 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed
7	6765-6795	42 dBµA/m at 10m	-	No requirement	EN 300 330	ISM band based on RR No. 5.138
8	7400-8800	9 dBµA/m at 10m	-	No requirement	EN 300 330	-
9	10200-11000	9 dBµA/m at 10m	-	No requirement	EN 300 330	-
10	26957-27283	42 dBµA/m at 10m	-	No requirement	EN 300 330	-
11	13553-13567	42 dBµA/m at 10m	-	No requirement	EN 300 330	-
12	148.5-5000	-15 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed. The maximum field strength is specified in a bandwidth of 10 kHz. The maximum allowed total field strength is -5 dBµA/m at 10 m for systems operating at bandwidths larger than 10 kHz whilst keeping the density limit (-15 dBµA/m in a bandwidth of 10 kHz)
13	5000-30000	-20 dBµA/m at 10m	-	No requirement	EN 300 330	In case of external antennas only loop coil antennas may be employed. The maximum field strength is specified in a bandwidth of 10 kHz. The maximum allowed total field strength is -5 dBµA/m at 10 m for systems operating at bandwidths larger than 10 kHz whilst keeping the density limit (-20 dBµA/m in a bandwidth of 10 kHz)

Schedule 1.4. Radiation Limits and Technical Conditions of Wideband Data Transmission SRDs

Sl. No.	Frequency Bands (GHz)	Field Strength/ Radiated Power	Spectrum Access Method/Bandwidth Requirement	Duty cycle	Standard	Notes
1	17.1-17.3	20 dBm mean e.i.r.p.	OFDMA	No requirement	EN 300 836	Point to point with transmitter maximum power less than 10 mW
2	57-64	40 dBm mean e.i.r.p. This refers to the highest power level of the transmitter power control range during the transmission burst if transmitter power control is implemented	Adequate spectrum sharing mechanism (e.g. Listen-before-Talk, Detect-And-Avoid) shall be implemented by the equipment	No requirement	EN 302 567	Fixed outdoor installations are not allowed. The maximum mean e.i.r.p density is limited to 13 dBm/MHz.

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Schedule 1.5. Radiation Limits and Technical Conditions of Railway SRDs⁽¹⁾

NO	Frequency Bands(MHz)	Field Strength/ Radiated Power	Spectrum Access Method	Duty cycle	Standard	Notes
1	0.984-7.484	9 dB μ A/m at 10m	-	≤ 1% duty cycle	EN 302608	Transmitting only on receipt of a Balise/Euro balise tele-powering signal from a train. Note: Centre frequency is 4234
2	7.3-23	-7 dB μ A/m at 10m	-	No requirement	EN 302609	Maximum field strength specified in a bandwidth of 10 kHz, spatially averaged over any 200m length of the loop. Transmitting only in presence of trains. Spread Spectrum Signal, Code Length: 472 Chips. Note: Centre frequency is 13.547 MHz
3	27.09-27.1	42 dB μ A/m at 10 m	-	No requirement	EN 302608	Tele-powering and Down-link signal for Balise/Euro balise. May also be optionally used for the activation of the Loop/Euro loop. Note: Centre frequency is 27.095 MHz
4	2446-2454	500 mW e.i.r.p.	-	No requirement	EN 300761	Transmitting only in presence of trains. Five channels with 1.5 MHz channel spacing in the 2446-2454 MHz
5	76000-77000	55 dBm peak e.i.r.p.	-	No requirement	EN 301091	Obstruction/Vehicle detection via radar Sensor at railway level crossings. 50 dBm average power or 23.5 dBm average power for pulse radar.

⁽¹⁾: Utilization frequencies provided in Schedule 1.5 for national railway network is subject to advance notice to TRBR

Schedule 1.6. Radiation Limits and Technical Conditions of SRDs in Transport and Traffic Telematics (TTT)

NO	Frequency Bands (GHz)	Field Strength/ Radiated Power	Spectrum Access Method/Duty cycle	Channel Bandwidth	Standard	Notes
1	0.870-0.8758	500 mW e.i.r.p./ 100 mW e.i.r.p.	≤0.1%. For ER-GSM protection, it is limited to ≤0.01% and limited to a maximum transmit on time of 5ms/1s	≤ 500 kHz	EN 300 220	500 mW restricted to vehicle-to-vehicle applications. 100 mW is restricted to in-vehicle applications. Adaptive Power Control (APC) is required. The APC is able to reduce a link's transmit power from its maximum to ≤ 5mW.
2	5.796-5.805	2 W e.i.r.p. 8 W e.i.r.p.	No requirement	-	EN 300674	Permit from TRBR is required for the higher power of 8 W systems
3	5.805-5.815	2 W e.i.r.p. 8 W e.i.r.p.	No requirement	-	EN 300674	Permit from TRBR is required for the higher power of 8 W systems
4	24.25-26.65	-7.5 dBm e.i.r.p.	No requirement	-	EN 302288 ECC/DEC/(04)10	For automotive Short-Range Radars (SRR). Installation of SRR equipment allowed until 1 January 2018. This date is extended by 4 years for SRR equipment mounted on motor vehicles. -41.3 dBm/MHz maximum e.i.r.p average power density and 0 dBm/50MHz maximum e.i.r.p peak power density
5	24.075-25.05	100 mW e.i.r.p.	No requirement	-	EN 302858	For automotive Radars.
6	24.075-24.15	0.1 mW e.i.r.p.	No requirement	-	EN 302858	For automotive Radars.
7	24.075-24.15	100 mW e.i.r.p.	4 μ s/40 kHz dwell time every 3ms	At least 250 kHz for pulse signals	EN 302858	For automotive radars (road vehicles only). The spectrum access and mitigation requirement is given for devices mounted behind a bumper. If mounted without a bumper, the requirement should be 3 μ s/40kHz maximum dwell time every 3ms.

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8	24.075-24.15	100 mW e.i.r.p.	1ms/40 kHz dwell time every 40ms	At least 250 kHz for pulse signals	EN 302858	For automotive radars (road vehicles only). The spectrum access and mitigation requirement is given for devices mounted either behind a bumper or mounted without a bumper.
9	24.15-24.25	100 mW e.i.r.p.	No requirement	-	EN 302858	For automotive radars (road vehicles only).
10	24.25-24.495	-11 dBm e.i.r.p.	$\leq 0.25\%/s/25$ MHz duty Cycle	-	EN 302858	For automotive radars. The activity of the Wideband Low Activity Mode (WLAM) is limited to avoid the risk of interference and this mode is only activated in specific configurations as a complementary to designation 5 to 9 in this table
11	24.25-24.5	+20 dBm e.i.r.p. /+16 dBm e.i.r.p.	5.6%/s/25 MHz duty cycle / 2.3%/s/25 MHz duty cycle	-	EN 302858	For automotive radars. The activity of the Wideband Low Activity Mode (WLAM) is limited to avoid the risk of interference and this mode is only activated in specific configurations as a complementary to designation 5 to 9 in this table.
12	24.495-24.5	-8 dBm e.i.r.p.	1.5%/s/5 MHz duty Cycle	-	EN 302858	For automotive radars. The activity of the Wideband Low Activity Mode (WLAM) is limited to avoid the risk of interference and this mode is only activated in specific configurations as a complementary to designation 5 to 9 in this table.
13	76-77	55 dBm peak e.i.r.p.	No requirement	-	EN 301091	50 dBm average power or 23.5 dBm average power for pulse radar only. For ground based vehicle and infrastructure systems only.
14	76-77	30 dBm e.i.r.p.	Average power spectral density less than 3 dBm/MHz. Duty cycle limit 56%/s	-	EN 303360 ECC/DEC/(16)01	For obstacle detection radars for rotorcraft use.
15	77-81	55 dBm e.i.r.p.	Maximum average power spectral density -3 dBm/MHz e.i.r.p.	≥ 50 MHz	EN 302 264 ECC/DEC/(04)03	Similar to TTT radars, for short range radars for use in obstacle detection, blind point detection, movement and stop, parking, collision detection.

Schedule 1.7. Radiation Limits and Technical Conditions of SRDs Applications for Detecting Movement and Alert

No	Frequency Bands (MHz)	Field Strength/ Radiated Power	Spectrum Access Method/Band width Requirement	Duty cycle	Standard	Notes
1	30-124000	In accordance with section 4.4.3.4 of referred standard	-	-	EN 302 066 ECC/DEC/(06)08	For Ground- and Wall- Probing Radar (GPR/WPR) imaging systems, subject to an appropriate permit issued by TRBR for professional use only.
2	2200-8000	In accordance with table 1 of ECC/DEC/(07)01	Using LBT, TPC and low duty cycle for preventing interference	-	EN 302 435 ECC/DEC/(07)01	For Material Sensing Devices. Such as finger positioned close to a saw blade, drilling collision with gas pipe and similar hazards
3	2400-2483.5	25 mW e.i.r.p.	No requirement	-	EN 300 440 ERC/DEC/(01)08	Subject to having embedded antenna
4	3100-4800	In accordance with table 1 of ECC/DEC/(11)10	Under the conditions section 2 of Annex 1 of ECC/DEC/(11)10	-	EN 302 065 ECC/REC/(11)10	For UWB LT1 application for emergency and disaster situations (LAES), subject to an appropriate permit issued by TRBR for professional use only.

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5	3100-4800	In accordance with table 1 of ECC/DEC/(11)09	Under the conditions section 2 of Annex 1 of ECC/DEC/(11)09	-	EN 302065 ECC/REC/(11)09	For UWB LT2, subject to an appropriate permit issued by TRBR for professional use only.
6	4500-7000	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	-	EN 302 372	For Tank Level Probing Radar (TLPR)
7	8500-10600	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	-	EN 302 372	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.
8	24050-27000	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	-	EN 302 372	For Tank Level Probing Radar (TLPR)
9	57000-64000	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	-	EN 302 372	For Tank Level Probing Radar (TLPR)
10	75000-85000	-41.3 dBm/MHz e.i.r.p. outside the enclosed test tank structure	No requirement	-	EN 302 372	For Tank Level Probing Radar (TLPR)
11	6000-8500	-33 dBm/MHz mean e.i.r.p. +7 dBm/MHz peak e.i.r.p.	With the 20 dB APC range	-	EN 302 729 ECC/DEC/(11)02	For Industrial Level Probing Radar (LPR).
12	24050-26500	-14 dBm/MHz mean e.i.r.p. +26 dBm/MHz peak e.i.r.p.	With the 20 dB APC range	-	EN 302 729 ECC/DEC/(11)02	For Industrial Level Probing Radar (LPR).
13	57000-64000	-2 dBm/MHz mean e.i.r.p. +35 dBm/MHz peak e.i.r.p.	With the 20 dB APC range	-	EN 302 729 ECC/DEC/(11)02	For Industrial Level Probing Radar (LPR).
14	75000-85000	-3 dBm/MHz mean e.i.r.p. +34 dBm/MHz peak e.i.r.p.	With the 20 dB APC range	-	EN 302 729 ECC/DEC/(11)02	For Industrial Level Probing Radar (LPR).
15	9200-9500	25 mW e.i.r.p.	No requirement	-	EN 300440	-
16	9500-9975	25 mW e.i.r.p.	No requirement	-	EN 300440	-
17	10500-10600	500 mW e.i.r.p.	No requirement	-	EN 300440	-
18	13400-14000	25 mW e.i.r.p.	No requirement	-	EN 300440	-
19	17100-17300	26 dBm e.i.r.p.	DAA	-	EN 300440	For Ground Based Synthetic Aperture Radar (GBSAR).
20	24050-24250	100 mW e.i.r.p.	No requirement	-	EN 300440	The frequency band 24.0-24.25 GHz is identified with the same emission parameters in row number 28 in Schedule 2

Schedule 1.8. Radiation Limits and Technical Conditions of SRDs used for Alarm Application

No	Frequency Bands (MHz)	Field Strength/ Radiated Power	Duty Cycle	Maximum Bandwidth	Standard	Notes
1	868.6-868.7	10 mW e.r.p.	≤ 1.0 %	25 kHz	EN 300 220	The whole frequency band may also be used as 1 channel for high speed data transmissions
2	869.2-869.25	10 mW e.r.p.	≤ 0.1 %	25 kHz	EN 300 220	Social Alarms
3	869.25-869.3	10 mW e.r.p.	≤ 0.1 %	25 kHz	EN 300 220	-
4	869.3-869.4	10 mW e.r.p.	≤ 1.0 %	25 kHz	EN 300 220	-
5	869.65-869.7	10 mW e.r.p.	≤ 10 %	25 kHz	EN 300 220	-

Schedule 1.9. Radiation Limits and Technical Conditions of SRDs for Tracking, Tracing and Data Acquisition

No	Frequency Bands (MHz)	Field Strength/ Radiated Power	Spectrum Access Method/Bandwidth Requirement	Modulation/ Maximum Bandwidth	Standard	Notes
1	0.4569-0.4571	7 dBµA/m at 10 m	No requirement	Continuous wave (CW) - no modulation	EN 300 718	Emergency detection of buried victims and valuable items. Note: Centre frequency is 457 kHz
2	169.4-169.475	500 mW e.r.p.	≤ 10% duty cycle	≤ 50 kHz	EN 300 220	Meter Reading.
3	870-875.6	500 mW e.r.p.	≤ 2.5% duty cycle and APC required. For ER-GSM protection (873-875.6 MHz, where applicable), the duty cycle is limited to ≤ 0.01% and limited to a maximum transmit on time of 5ms/1s	≤ 200 kHz	EN 303 204	Individual TRBR permit is required for gateway stations. Adaptive Power Control (APC) required.
4	2483.5-2500	1 mW e.i.r.p.	Adequate spectrum sharing mechanisms (e.g. Listen-Before-Talk and Adaptive Frequency Agility) shall be implemented by the equipment and ≤ 10% duty cycle	≤ 3 MHz	EN 303 203	The application is for MBANS, indoor only within healthcare facilities
5	2483.5-2500	10 mW e.i.r.p.	Adequate spectrum sharing mechanisms (e.g. Listen-Before-Talk and Adaptive Frequency Agility) shall be implemented by the equipment and ≤ 2% duty cycle	≤ 3 MHz	EN 303 203	The application is for MBANS, indoor only within the patient's home
6	5725-5875	≤ 400 mW e.i.r.p.	APC required Adequate spectrum sharing mechanisms (e.g. DFS and DAA) shall be implemented	≥ 1 MHz and ≤ 20MHz	EN 303 258	Wireless Industrial Applications (WIA). Individual permit is required. The Adaptive Power Control is able to reduce the e.i.r.p. to ≤ 25 mW

Schedule 1.10. Radiation Limits and Technical Conditions of SRDs for Radio Microphone, Assistive Listening Devices (ALD), Wireless Audio and Multimedia Streaming Systems

ON	Frequency Bands (MHz)	Field Strength/Radiated Power	Spectrum Access Method/Bandwidth Requirement	Maximum Bandwidth	Standard	Notes
1	29.7-47	10 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422	Radio microphones. On a tuning capability in the frequency bands 30.3-30.5 MHz, 32.15-32.45 MHz and 41.015-47.00 MHz.
2	87.5-108	50 nW e.r.p.	No requirement	≤ 200 kHz	EN 301 357	No RF signal generation if no modulating signal.
3	169.4-174	10 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422	Assistive Listening Device (ALD). On a tuning range basis
4	169.4-169.475	10 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422 ECC/DEC/(05)0 2	Assistive Listening Device (ALD). (Personal Hearing Aid System)
5	169.4-169.475	500 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422 ECC/DEC/(05)0 2	Assistive Listening Device (ALD). (Public Hearing Aid System) Individual TRBR licence is required
6	169.4875-169.5875	10 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422 ECC/DEC/(05)0 2	Assistive Listening Device (ALD). (Personal Hearing Aid System)
7	169.4875-169.5875	500 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422 ECC/DEC/(05)0 2	Assistive Listening Device (ALD). (Public Hearing Aid System). Individual TRBR licence is required
8	173.965-216	10 mW e.r.p.	No requirement	≤ 50 kHz	EN 300 422 ECC Report 230	For Assistive Listening Device (ALD) systems. On a tuning range basis.
9	174-216	50 mW e.r.p.	No requirement	-	EN 300 422	Radio microphones. On a tuning range basis. Individual TRBR licence is required
10	470-786	mW e.r.p.50	No requirement	-	EN 300 422	Radio microphones. On a tuning range basis. Individual TRBR licence is required
11	863-865	10 mW e.r.p.	No requirement	-	EN 301 357 EN 300 422	Radio microphones including wireless audio and multimedia streaming devices.
12	1785-1795	20 mW e.i.r.p. 50 mW e.i.r.p.	No requirement	-	EN 300 422	Radio microphones. 50 mW restricted to body worn equipment
13	1795-1800	20 mW e.i.r.p. 50 mW e.i.r.p.	No requirement	-	EN 301 357 EN 300 422	Radio microphones including wireless audio and multimedia streaming devices. 50 mW restricted to body worn equipment

Schedule 1.11. Radiation Limits and Technical Conditions of SRDs for Medical Implants and Their Associated Peripherals

No	Frequency Bands (MHz)	Field Strength/ Radiated Power	Spectrum Access Method/Bandwidth Requirement	Maximum Bandwidth	Standard	Notes
1	0.009-0.315	30 dB μ A/m at 10m	\leq 10% duty cycle	-	EN 302 195	The application is for Ultra Low Power Active Medical Implant systems using inductive loop techniques for telemetry purposes
2	0.315-0.600	-5 dB μ A/m at 10m	\leq 10% duty cycle	-	EN 302 536	The application is for animal implantable devices
3	12.5-20	-7 dB μ A/m at 10m	\leq 10% duty cycle	-	EN 300 330	The application is for ULP active animal implantable devices (ULP-AID), limited to indoor only applications. The maximum field strength is specified in a bandwidth of 10 kHz. The transmission mask of ULP-AID is defined as follows: 3dB bandwidth 300 kHz 10dB bandwidth 800 kHz 20dB bandwidth 2 MHz
4	30-37.5	1 mW e.r.p.	\leq 10% duty cycle	-	EN 302 510	The application is for Ultra Low Power medical membrane implants for blood pressure measurements.
5	402-405	-16 dBm e.r.p.	LBT+AFA	1 kHz	EN 301 839	The application is for Ultra Low Power Active Medical Implant and associated accessories. The individual transmitters may combine adjacent channels to increase bandwidth to 300 kHz.
6	2483.5-2500	10 dBm e.i.r.p.	LBT+AFA and \leq 10% duty cycle	1 MHz	EN 301 559	For Low Power Active Medical Implants and associated peripherals, covered by the applicable harmonised standard. Individual transmitters may combine adjacent channels on a dynamic basis for increased bandwidth higher than 1 MHz. Peripheral units are for indoor use only

Schedule 1.12. Technical Conditions of SRDs for Non-IMT IoT

No	Frequency Bands (MHz)	Maximum Transmitter/ Radiated Power	Maximum Duty Cycle	Maximum Channel Bandwidth	Standard	Notes
1	433.050-434.790	27dBm e.i.r.p.	1%	125 kHz	EN 300-220	Outdoor gateway station shall be registered by TRBR before installation
2	863 – 869	30 dBm e.i.r.p.	1%	125 kHz	EN 300-220	Outdoor gateway station shall be registered by TRBR before installation
3	915 – 918	30 dBm / 36 dBm e.i.r.p.	1%	variable	FCC-Part 15	Outdoor gateway station shall be registered by TRBR before installation

Annex 1.1
Notice Form of Retailer and Maintenance Agents
for SRD devices
(§1.6.3)

to be provided as an official letter

From:

Date:

To: TRBR

No.:

I herein, ID No.: CEO of licensee of "importing, trading, retailing or producing of radiocommunication equipment" No.: valid until: nominate seller Mr./Ms. shop name holding business license No. issued on date by address and contact No. as retailer of my SRD devices as well as deliverer of maintenance service. I also take responsibility of any violation and shortcoming from regulation without any excuse.

CEO name:

Signature:

Date:

Chapter 2

Class License, Model Radio Control (RC), Technical Conditions and Operational Regulation

2.1. Description

Use of radiocommunications is not restricted to voice, video, data or navigational purpose and can also be used for controlling of small or real sized aircraft, helicopter, vessel, car, robot or any other similar objects with human direct intervention usually. Use of models which are capable to fly, move on ground, move over or beneath the water surface need to be monitored seriously to assure compatibility of operations with various laws and regulations. The operation of models has to be monitored to assure safety of operators as well as others.

Nowadays controlling some types of models via network gets possible and driver/pilot could send model far out-of-sight with having live vision to on what is visible by model camera. For this type of models specific rules are applicable.

2.2. Scope

- 2.2.1. This section applies only to technical conditions and operational requirements related to frequency utilization by line of sight (immediate) radio controlled models and does not enter to the mechanical regulation, freedom of that or its restriction;
- 2.2.2. Providing complementary regulations dealing with mechanical requirement, type of propellant, moving speed, flying and sailing conditions, and security items is with other relevant organizations;
- 2.2.3. The requirement to use network telecommunication for controlling of models or controlling any other objects, falls in the context of relevant ICT network license;

2.3. Requirement

- 2.3.1. Increasing usage of models that are controllable by means of radio waves, remotely;
- 2.3.2. Variety of specifications and standards used for radio controls of models;
- 2.3.3. Need for determining transparent regulations for import, manufacturing and use model's radio control;
- 2.3.4. Need for minimizing interference thread on radiocommunication equipment that are operational in shared and adjacent frequency bands;
- 2.3.5. Determination of necessary technical conditions and regulation of frequency use to maximize usage of frequencies by the highest number of radio controls of models;
- 2.3.6. Concerns about the safety of users of radio controls and surrounding people, especially children, from the accident that may happen due to interference occurrence;
- 2.3.7. Complying with standards applicable to radio controls of models by the manufacturers and importers of radio control of models;

2.4. General operational regulations

- 2.4.1. Use of radio controls under this Guideline in case of distress and for rescue purpose has the highest priority and other applications fall below;
- 2.4.2. Application for obtaining of individual radio license is not required for installation and use of radio control devices for controlling of determined models if the RF specification of radio controls comply with this Guideline (see note 1);
- 2.4.3. Attachment of additional transceivers to model, in addition to radio control receiver, is permitted subject to:
 - a) complying of technical specification of attached transceiver by a class license for the given application, or;
 - b) obtaining of the relevant individual radio license or permission from TRBR, in advance;
- 2.4.4. User of model radio control is the only responsible person for all consequence of use;
- 2.4.5. Installation of fixed radio control station for models and use of fixed or mobile repeater station of radio control signal, require prior application for obtaining of TRBR probable permission;
- 2.4.6. Determination of weight requirement and non-radio related specification of flying models is set with the National Aviation authority;
- 2.4.7. Establishing of registered sport-entertainment clubs for use of radio controlled models could be acceptable by TRBR if in the constitution of clubs members were obliged to observe related safety, training, technical, security and regulatory requirements;

Note 1: Exemption from obtaining of individual radio license for a radio control mentioned in §2.4.2 dose not void needs to obtain complementary non-radio related permits for a model and it may be subject to complementary legal permits of other responsible organizations;

2.5. Location-of-use regulation

- 2.5.1. Use of radio control of models to have access beyond the national border - in ground or water or air - is strictly forbidden;
- 2.5.2. In case of radio-controlled flying models that takeoff from runaway; the flying location, flying maximum height, flying range, distance between flying locations and distance to airports, military camps and other protected places shall be in conformity with the regulation of the National Aviation authority;
- 2.5.3. The location and other location-related requirement of radio control of models, operating in water, shall be in conformity with the regulation of authority responsible for Ports and Maritime issues;
- 2.5.4. Use of radio controls to control out-of-sight models (such as out of sight flying models) requires obtaining of an individual permit from TRBR;
- 2.5.5. TRBR may impose some additional conditions (such as third party personal insurance and official registration) or require applicant to obtain confirmation of other authorities, before issuing a permit related to §2.5.4;
- 2.5.6. The out-of-sight radio controlled models shall be capable to return back to lunch or failsafe place in the event of a loss of control or video signal, automatically.

2.6. Technical conditions

- 2.6.1. Radio control models usually use frequency bands on shared basis with other radiocommunication services. Therefore, except in those frequency bands given in §2.7.1, there is no guarantee for prevention of co-channel and adjacent channel interference between models and fixed and mobile radiocommunication services;

- 2.6.2. The radio devices user for remote control of model shall be transmitter only and the radio device installed onboard model shall be receiver only;
- 2.6.3. Continues transmission of unmodulated carrier by radio control of non-flying models are not allowed and it is permitted for flying models if model operates with on-off signal or continues transmission is required for safe operation of model;
- 2.6.4. The time length of continues transmission by radio control shall in no event exceed three minutes, unless operation of model requires several change of control signal in any minute;
- 2.6.5. Use of call sign or other similar identification methods is not required during use of radio control;
- 2.6.6. Continues transmission of radio signal for testing purpose of radio control of models, shall not exceed one minute in any five minutes intervals;
- 2.6.7. The frequencies and radiation specification of radio control of models shall be in conformity with section 2.7;

2.7. Emission specification

- 2.7.1. Center frequencies listed in following table with the given specifications are considered for radio control of flying models exclusively:

Centre frequency in MHz (35 MHz band)	35.0, 35.01, 35.02, 35.03, 35.04, 35.05, 35.06, 35.07, 35.08, 35.09, 35.1⁽¹⁾, 35.11, 35.12⁽¹⁾, 35.13⁽¹⁾, 35.14, 35.15, 35.16, 35.17, 35.18, 35.19, 35.20, 35.21, 35.22
Channel spacing	10 kHz
Mean radiated power	Maximum 100 mW e.r.p.
Duty Cycle	No requirement
Transmitter maximum spurious emission level	Less than 16.4 µW in any 100 kHz
Receiver maximum spurious emission level	Less than 2 nW
Ratio of mean transmitter power level in operational frequency to mean spurious domain power level	Better than 40 dBc
Adjacent channel selectivity	Better than 60 dB
⁽¹⁾ Probability to cause or receive interference at centre frequencies 35.10, 35.12 and 35.13 MHz	

- 2.7.2. Using the frequency band 72-73 MHz for any type radio control of models in Vanuatu is forbidden;

- 2.7.3. Center frequencies listed in following table with the given specifications are considered for radio control of non-flying models exclusively:

Centre frequency in MHz (40 MHz band)		40.665, 40.675, 40.685, 40.695, 40.705, 40.715, 40.725, 40.735, 40.745, 40.755, 40.765, 40.775, 40.785, 40.795, 40.805, 40.815, 40.825, 40.835, 40.845, 40.855, 40.865, 40.875, 40.885, 40.895, 40.905, 40.915, 40.925, 40.935, 40.945, 40.955, 40.965
Channel spacing		10 kHz
Mean radiated power		Maximum 100 mW e.r.p.
Duty Cycle		No requirement
Transmitter maximum spurious emission level		Less than 16.4 μ W in any 100 kHz
Receiver maximum spurious emission level		Less than 2 nW
Ratio of mean transmitter power level in operational frequency to mean spurious domain power level		Better than 40 dBc
Adjacent channel selectivity		Better than 60 dB

- 2.7.4. Using the frequency band 75.4-76 MHz for any type radio control of models in Vanuatu is forbidden;
- 2.7.5. Center frequencies listed in following table with the given specifications are considered for radio control of any type models, exclusively:

Centre frequency in MHz (27 MHz band)		26.995, 27.045, 27.095, 27.145, 27.195, 27.255
Channel spacing		10 kHz
Mean radiated power		Maximum 100 mW e.r.p.
Duty Cycle		No requirement
Transmitter maximum spurious emission level		Less than 16.4 μ W in any 100 kHz
Receiver maximum spurious emission level		Less than 2 nW
Ratio of mean transmitter power level in operational frequency to mean spurious domain power level		Better than 40 dBc
Adjacent channel selectivity		Better than 60 dB

- 2.7.6. For use of the center frequency 27.255 MHz for radio control of models, enough care should be provisioned to prevent interference on CB (citizen's band) handsets;
- 2.7.7. Use of the frequency band 2400-2483.5 MHz for radio control of non-recreational professional models, for data link under the relevant regulation with the given technical specification for indoor usage and omni-directional antennas is permitted. The maximum power of Transmitter should be 100 mW;
- 2.7.8. Use of frequencies for radio control of models other than those given in this Guideline is subject to compliance with the frequencies outlined for non-specific SRDs (short range devices) in the section 1.4 of this Chapter;

2.8. Prohibitions

- 2.8.1. Any activity contrary to the laws of Vanuatu using radio control of models is forbidden;

- 2.8.2. Importing, buying and selling, or producing for domestic sale of radio controls contrary to this Guideline is forbidden and TRBR would confiscate devices and offender would be subject to enforcement;
- 2.8.3. Any intentional (co-channel or adjacent channel) interference by radio control of models to receiving station of other radiocommunication services is forbidden;
- 2.8.4. Imposing any alternation to radio control of models, such as increasing radiating power and change of antenna that breaks the given radiation characteristics of this Guideline, is forbidden;
- 2.8.5. Utilization of the frequencies provided in this Guideline by remote radio control and associated onboard receivers installed onboard model, in duplex mode is forbidden;
- 2.8.6. Utilization of the frequencies provided in this Guideline by remote radio control for controlling of a secondary transceiver installed onboard model is forbidden;
- 2.8.7. Use a radio control of model to control another radio control of model is forbidden;
- 2.8.8. Transmission of audio, video, telegraph, non-control data and any other unauthorized signal to model by radio control is forbidden;
- 2.8.9. A person who was already received a warning written message for stopping operation of radio control of model from TRBR, has no right to re-initiate operation until TRBR issue a permit;

2.9. Standards

- 2.9.1. Technical specification of radio control of models regulated by this Guideline shall be in conformity with the technical requirements of this Guideline and the standards given in Table 2.1;
- 2.9.2. The laboratory issuing type approval certificate for radio control of models shall be accredited by TRBR in advance;
- 2.9.3. In case of alternation to radiation specification of radio control of models, for any reason such as repairing, re-testing of device by an accredited laboratory to check compliance with standard is mandatory;

Table 2.1. The standards adopted for radio control of models

Standard	Title
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 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
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 wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

Chapter 3

Class License, Radio Frequency Identification Devices (RFID) Technical Conditions and Operational Regulations

3.1. Description of RFID

Use of tags containing information for identification of objects and animals have long been common. Important information such as personal identification digits, name, owner name, date, key specifications, etc. are depicted on or stored inside these tags that may be used by eyes or special readers. Currently, rapid growth of radiocommunication technology enables Radio Frequency Identification (RFID) tags to store above information. RFIDs act as small tiny light wireless memory tag that can be stuck on or embedded inside on objects or alive bodies to hold information which are readable from near or distant by means of wireless fixed or portable reading device.

Due to low price of RFID tags and processing ease of stored data by RFID readers, RFIDs have found diverse application worldwide. For example, tracking of objects and alive bodies, parcel items, banking transactions, transportation monitoring and management, distribution and sale of goods, warehousing, electronic money, medical affairs, sport activities, identifying individuals, identification of documents, the production-line management, remote control doors, etc.

This Guideline, which has to be met by users, importers and manufacturers; provides technical conditions and operational regulations related to the use of radio frequency by RFIDs in Vanuatu.

3.2. Scope

3.2.1. The current technical conditions and operation regulations is applicable to frequency bands and radio specification of RFIDs. Therefore, issues like data security and other non-radio requirement are beyond this Guideline;

3.3. Requirement

3.3.1. Increasing use of RFIDs and its growing popularity;

3.3.2. Availability of different standards, radio specifications and frequency bands for RFIDs;

3.3.3. Need for minimizing interference probability of RFIDs on radiocommunication in working and adjacent frequency bands;

3.3.4. Necessity to determine technical conditions and operational regulations ensuring efficient use radio frequency spectrum by the highest number of RFID devices;

3.3.5. Need to develop a transparent technical conditions and regulation for importers, manufacturers and users of RFIDs;

3.3.6. Necessity for compliance of manufactured and imported RFIDs with accepted standards;

3.4. Regulations

3.4.1. RFIDs shall neither claim protection from the interference of radiocommunication services nor make interference to radiocommunication receiver;

3.4.2. Installation and use of RFID tags and corresponding readers, individually or integrated with other objects, which are in compliance with technical conditions and regulations of schedule 3.1 of this Guideline, is not subject to individual radio license from TRBR;

- 3.4.3. Installation and use of RFID tags and corresponding readers, individually or integrated with other objects, which are in compliance with the technical conditions of non-specific SRDs in the section 1.4 of this Chapter, is not subject to individual radio license from TRBR;
- 3.4.4. RFID devices users are responsible for all consequences of use, including data transmission security or loss;
- 3.4.5. Use of Call-Sign or other similar identities for identification RFID signals is not mandatory;
- 3.4.6. Attenuation values of maximum permitted spurious domain emission power level of RFID devices in schedule 3.1, relative to total mean power P (in Watts) shall be above the value calculated from $56 + 10 \log(P)$ in dBc in reference bandwidth, or 40 dBc, whichever is less stringent. The reference bandwidth is 10 kHz, 100 kHz or 1 MHz if carrier frequency is between 150 kHz-30 MHz, 30 MHz-1 GHz or above 1 GHz, respectively;
- 3.4.7. The adjacent channel selectivity for RFID devices in schedule 3.1, shall be better than 60 dBc;
- 3.4.8. The RFID devices spurious emission shall comply with following table:

Table 3.1. RFID devices spurious emission

Frequency	865-868 MHz	Above 1 GHz
Operation mode		
Working transmitter	250 nW e.r.p.	1 μ W e.i.r.p.
Transmitter in standby ⁽¹⁾	2 nW e.r.p.	20 nW e.i.r.p.
Receiver ⁽¹⁾	2 nW e.r.p.	20 nW e.i.r.p.

⁽¹⁾: The RFID receiver and standby transmitter spurious emission shall not exceed 2 nW e.r.p. in other frequency bands below 1 GHz.

3.5. Prohibitions

- 3.5.1. By having appropriate reference to law, any activity against national security, immunity and citizens by means RFIDs is prohibited;
- 3.5.2. Importing, buying, retailing and manufacturing RFID devices, which are inconsistent with this Guideline, are prohibited. In case of breaching this Guideline, TRBR will confiscate illegal items and enforce regulations;
- 3.5.3. Importing, buying, retailing and manufacturing of RFID devices in the frequency band 902-928 MHz for domestic market are forbidden;
- 3.5.4. Any intentional (co-channel or adjacent channel) interference by RFID devices on receiving station of radiocommunication services is forbidden;
- 3.5.5. Imposing any alternation to RFID devices, including increasing of transmitter power and changing of antenna, which exceed radiation specification of this Guideline is forbidden;
- 3.5.6. Transmission of voice, image, telegraph, irrelevant data and any non-identifier information with RFID reader devices are forbidden;
- 3.5.7. Continues transmission of radio frequency signal by RFID devices is forbidden;

3.6. Standards

- 3.6.1. Technical specification of RFID devices mentioned in this Guideline shall be consistent with the given technical conditions in this Guideline and with the standards listed in Table 3.2;
- 3.6.2. Re-measuring of RFID by one of the accredited testing laboratories is mandatory to check its compliance with standards, if device radiation specification changed for any reason such as repairing;

3.6.3. For use in domestic market, RFID readers and corresponding tags shall obtain type approval certificate from TRBR;

Table 3.2. The standards adopted for RFIDs

Standard	Title
EN 300 220, 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 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
EN 302 208-1	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; Part 1: Technical requirements and methods of measurement
EN 300 330	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
EN 300 440	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
FCC Part 95	Part 95 FCC Rules was published in January 2009
ISO/IEC 18000-2	Radio frequency identification for item management -- Part 2: Parameters for air interface communications below 135 kHz
ISO/IEC 18000-3	Radio frequency identification for item management -- Part 3: Parameters for air interface communications at 13,56 MHz
ISO/IEC 18000-4	Radio frequency identification for item management -- Part 4: Parameters for air interface communications at 2,45 GHz
ISO/IEC 18000-7	Radio frequency identification for item management -- Part 7: Parameters for active air interface communications at 433 MHz
ETSI TR 102 378	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for identification and location systems; System Reference Document for inductive systems for industrial applications operating in the frequency range from 400 kHz to 600 kHz

3.7. Schedules

Schedule 3.1. RFID emission specification (§3.4.2)

No	Frequencies (MHz)	Maximum Power/Field Strength	Maximum Channel Spacing	Spectrum Access Method	Using Location Requirement	Standards	Remarks
1	0.125-0.135	72 dBµA/m at 10m	No requirement	No requirement	-	ISO/IEC 18000-2 Part 2 EN 300 330	-
2	0.400-0.600	-8 dBµA/m at 10 m	No requirement	No requirement	-	EN 300 330 ETSI TR 102 378	-
3	13.553-13.567	42 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330 ISO/IEC 18000-3	ISO 14443 for smart card applications and ISO 15693 for larger ranges
3.1	11.810-12.660, 14.460-15.310	-16 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 3
3.2	12.660-13.110, 14.010-14.460	-10 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 3
3.3	13.110-13.410, 13.710-14.010	-3.5 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 3
3.4	13.410-13.553, 13.567-13.710	9 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 3
4	13.553-13.567	60 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330 ISO/IEC 18000-3	ISO 14443 for smart card applications and ISO 15693 for larger ranges. For use by EAS also
4.1	12.660-13.110, 14.010-14.460	-5 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 4
4.2	13.110-13.360, 13.760-14.010	Linear transition from 27 to -3.5 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 4
4.3	13.460-13.553, 13.567-13.460	27 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 4
4.4	13.360-13.460, 13.660-13.760	-3.5 dBµA/m at 10m	No requirement	No requirement	-	EN 300 330	Only in conjunction with band 4
5	433.050-434.79	10 mW e.r.p	No requirement	duty cycle < 10%	-	EN 300 220 ISO/IEC 18000-7	Active RFID tags restricted to 433.5-434.5 MHz
6	865-868	2 W e.r.p.	200 kHz	Continues transmission in each channel is less than 5s while the period between	No requirement	EN 302 208	The 2W power are permitted only in four centre frequencies 865.7, 866.3, 866.9 and 867.5 MHz having bandwidth less than 200 kHz

				consecutive transmissions on the same channel shall be at least 100ms			
7	865-865.6	100 mW e.r.p.	200 kHz	No requirement	No requirement	EN 302 208	Frequency hopping or other spread spectrum techniques shall not be used. Channel centre frequencies are 864.9 MHz + (0.2 MHz * channel numbers 1 to 3)
8	865.6-867.6	2 W e.r.p.	200 kHz	No requirement	No requirement	EN 302 208	Frequency hopping or other spread spectrum techniques shall not be used. Channel centre frequencies are 864.9 MHz + (0.2 MHz * channel numbers 4 to 13)
9	867.6-868	500 mW e.r.p.	200 kHz	No requirement	No requirement	EN 302 208	Frequency hopping or other spread spectrum techniques shall not be used. Channel centre frequencies are 864.9 MHz + (0.2 MHz * channel numbers 14 and 15)
10	2446-2454	500 mW e.i.r.p.	No requirement	No requirement	No requirement	EN 300 440 ISO/IEC 18000-4	A directional antenna with the equal or less than ±45 degrees horizontal beamwidth and more than 15 dB lower side lobe level shall be used. FHSS or unmodulated carrier (CW) shall be used only.
11	2446-2454	500 mW e.i.r.p. to 4 W e.i.r.p.	No requirement	duty cycle < 15% in any 200 ms (30 msec on/170 msec off)	Shall by technical means be restricted to in-building use. Equipped with an automatic power control reducing power level to 500 mW e.r.p. if device moved to outdoor	EN 300 440, ISO/IEC 18000-4	Automatic power control mechanism described in Annexes C and D of EN 300 440. A directional antenna with the equal or less than ±45 degrees horizontal beamwidth and more than 15 dB lower side lobe level shall be used. For radiated powers above 500 mW e.r.p. FHSS modulation shall be used only

Chapter 4

Class License, Technical Conditions and Operational Regulation of Ultra-wideband Technology (UWB) in the Frequency Range below 10.6 GHz

4.1. Description

Ultra-wideband technology (UWB) is a new technology for transmission of big amount of data in short distance in an adverse propagation condition. Transmitters in this technology cause a low power radiation within an ultra-wideband bandwidth in a way not to disturb ongoing radiocommunications within utilized spectrum. This technology has been implemented for many applications such as short-range high speed communication, radar imaging, medical imaging, detection the movement or location of persons or objects, vehicular radars and intelligent transportation. Due to capability of UWB technology to deliver high data rates with small energy consumption for multiple clients, it is more preferred compared to other indoor technologies such as WiFi and Bluetooth. For the near future, expected that the mass-produced devices such as personal computers, laptops, cameras, vehicles, mobile phones, TVs, and audio systems would widely use UWB technology for high-speed data communication among themselves.

Due to exclusive capabilities implemented by use of UWB technology, administrations not only set restriction on some specific UWB applications, also provide technical and operational regulations for manufacturers and users. Accordingly, this Guideline published to provide national requirements concerning technical conditions and operational regulation applicable to short range UWB technology transmitters or receivers, transparently, in frequencies below 10.6 GHz.

4.2. Requirement

- 4.2.1. Applications using UWB technology are beneficial for sectors such as public protection, construction, engineering, science, medical, consumer applications, information technology, multimedia entertainment and transportation;
- 4.2.2. Devices using UWB technology are being developed with transmissions that span numerous radiocommunication service allocations which may cause harmful interference, indoor and outdoor, despite the extreme low power radiation;
- 4.2.3. Continues modernization of UWB technology in standardization bodies to make it compatible with growing data rates in radiocommunication networks;
- 4.2.4. Possibility of frequency band sharing with the various existing radiocommunication services by reduction of interference probability using low power radiation and no claim for protection from interference of radiocommunication systems;

4.2.5. The following recommendations, report and decision describing various aspect of UWB technology:

- Recommendations ITU-R SM.1754: Measurement techniques of ultra-wideband transmissions,
- Recommendations ITU-R SM.1755: Characteristics of ultra-wideband technology,
- Recommendations ITU-R SM.1756: Framework for the introduction of devices using ultra-wideband technology,
- Recommendations ITU-R SM.1757: Impact of devices using ultra-wideband technology on systems operating within radiocommunication services,
- Report ITU-R SM.2057: Studies related to the impact of devices using UWB technology on radiocommunication services,
- ECC Decision (06)04: The harmonised conditions for devices using UWB technology in bands below 10.6 GHz,

As guideline for Regulator's for providing national regulation for UWB technology;

4.2.6. Effectiveness of application of DAA and LDC in devices using UWB technology to use higher radiation power compared to UWB devices without DAA and LDC;

4.3. Technical regulation

4.3.1. Operation of devices using UWB technology is subject to not causing interference to and not claiming protection from, or placing constraints, on the radiocommunication services;

4.3.2. Operation of devices using UWB technology is authorized if:

a) used indoor; or

b) used outdoor, with no roof or surrounding walls, subject to not mounting at stationary location and without use outside-building antenna;

4.3.3. The Maximum peak e.i.r.p. density in the frequency bands used by UWB technology that are not using DAA and LDC for interference reduction, shall be in accordance with schedule 4.1;

4.3.4. The maximum mean e.i.r.p. density of devices using UWB technology inside road and rail vehicles (directed inside and not attached to the exterior of vehicle) in the frequency range 3.1 GHz to 4.8 GHz and 6 GHz to 8.5 GHz, is restricted to an exterior limit of -53.3 dBm/MHz. This value may be increased to -41.3 dBm/MHz if TPC of 12 dB is implemented. Reference values for other frequency bands are provided in schedule 4.1;

4.3.5. Devices implementing LDC technique within the band 3.1 GHz to 4.8 GHz, are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined in 50 MHz;

4.3.6. Devices implementing DAA technique within the bands 3.1 GHz to 4.8 GHz and 8.5 GHz to 9 GHz, are permitted to operate with a maximum mean e.i.r.p. spectral density of -41.3 dBm/MHz and a maximum peak e.i.r.p. of 0 dBm defined in 50 MHz;

4.4. General Regulations

4.4.1. Importing, producing, buying and selling devices using UWB technology, standalone or embedded in other devices, are authorized if comply with all technical conditions and standards of this Guideline;

4.4.2. Use of devices using UWB technology, standalone or embedded in other devices, is license-free under this Guideline if device comply with all technical conditions and standards of this Guideline.

4.5. Prohibitions

- 4.5.1. Establishment, installation or operation of devices using UWB technology without permission of TRBR is not allowed, except those devices provided by this Guideline under a class license;
- 4.5.2. Use of UWB technology in the playing toys, vessels, satellites, flying models, aircrafts and other aeronautical equipment are forbidden.

4.6. Standards

- 4.6.1. The required standards for devices using UWB technology are provided in Table 4.1;
- 4.6.2. The laboratories measuring technical specification of devices using UWB technology shall be accredited by TRBR;
- 4.6.3. Alternation of radiation specification of devices using UWB technology, for any reason such as repairing, requires re-testing of devices by an accredited laboratory to check compliance of device with standards and technical conditions;

Table 4.1. The standards adopted for UWBs

Standard	Title
ETSI EN 302 065	Electromagnetic compatibility and Radio spectrum Matters (ERM); Ultra Wideband (UWB) technologies for communication purposes; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
ETSI EN 302 500	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band (UWB) technology; Location Tracking equipment operating in the frequency range from 6 GHz to 8.5 GHz; Part 1: Technical characteristics and test methods

Schedule 4.1. General limits of devices using UWB technology (§4.3.3)

Frequency Range (GHz)	Maximum mean e.i.r.p. density (dBm/MHz)	Maximum peak e.i.r.p. density (dBm defined in 50MHz)
Below 1.6 GHz	-90	-50
1.6 to 2.7 GHz	-85	-45
2.7 to 3.4 GHz	-70	-36
3.4 to 3.8 GHz	-80	-40
3.8 to 6 GHz	-70	-30
6 to 8.5 GHz	-41.3	0
8.5 to 10.6 GHz	-65	-25
Above 10.6 GHz	-85	-45

Chapter 5

Class License, Citizen Band Radio Station License

5.1. Description

Citizen Band (CB) radios are short distance devices that can be used by anyone in Vanuatu without need for application to obtain individual radio license. All CB devices are authorised by the class licence presented here and unlike amateur radio it may be used for business or personal communications. CB radio is, in many countries, a system of short-distance radio communications between individuals typically on a selection of 40 shared channels within the 27 MHz (11 m) band. Moreover, eighty 12.5 kHz channels designated for CB radios in the band 244.9875 – 246 MHz in Vanuatu. Only one station may transmit at a time; other stations must listen and wait for the shared channel to be available. It is customary for stations waiting to use a shared channel to broadcast the single word "Break" followed by the channel number, during a lull in the conversation. This informs people using the channel that others are waiting. Citizens band is distinct from other personal radio service.

5.2. Requirement

- 5.2.1. Needs of general public to have access to personal mobile communication systems to communicate easily without individual license requirement;
- 5.2.2. Weak or lack of coverage of cellular mobile networks in non-populated and remote location where personal radiocommunication may become necessary;
- 5.2.3. There is possibility to designate some frequency channels to well-known CB radios, as many other countries, in our Region (3).

5.3. General Regulations

- 5.3.1. Operator of CB station:
 - (a) except in an emergency — must not operate a CB station on carrier frequency 27.065 MHz (HF channel 9); or
 - (b) except if a carrier frequency mentioned in paragraph (a) is not accessible must not initiate contact with another CB station or operate a CB station on:
 - (i) carrier frequency 27.085 megahertz (HF channel 11); or
 - (ii) carrier frequency 27.155 megahertz (HF channel 16);
- 5.3.2. A person must not use with a CB transmitter device that encrypts speech transmission in transmitting a radio signal on a carrier frequency that is referred to in paragraph 5.3.1(a) or 5.3.1(b);
- 5.3.3. A person for initiating communications with another CB station, when operating a CB station to transmit audio tones, must on a carrier frequency mentioned in item 1 to 8 of Schedule 5.1, only transmit audible tones for less than 3 seconds in any period of 60 seconds;
- 5.3.4. A person must not make an alteration to a CB station, or to accessory apparatus used in the operation of a CB station, that is likely to cause interference to radiocommunications, except with the consent in writing of an inspector who is reasonably satisfied that the alteration has been made to test the operation of the CB station;
- 5.3.5. Operator of a CB station must not transmit on a carrier frequency mentioned in an item in Schedule 5.1 if the transmission will cause harmful interference to the operation of any other CB station on that carrier frequency;

- 5.3.6. Operator of CB station must not transmit in a way that would be likely to cause a reasonable person, justifiably in all the circumstances, to be seriously alarmed or seriously affronted, or cause harassing a person;
- 5.3.7. Operator of CB station must not fail to comply with a direction of TRBR inspectors;
- 5.3.8. Operation of CB station to transmit signals that identify a CB station or indicate its geographic location with a duty cycle of more than 10 seconds in any period of 60 minutes is not allowed;
- 5.3.9. Operator of CB station must not, by means of a CB station, broadcast media signal;
- 5.3.10. A person must not operate a CB station that is connected to a telecommunications network unless such connection is permitted in the license of relevant telecommunication network.

5.4. Standards

- 5.4.1. A person must not operate a CB station unless the CB station complies with each standard made under the Vanuatu National Table of Frequency Allocation (NTFA) including those provided in this section

The standards adopted for CBs

Standard	Title
ETSI EN 300135	Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Citizens' Band (CB) radio equipment; Angle-modulated Citizens' Band radio equipment (PR 27 Radio Equipment); Parts 1& 2
ETSI EN 300433	Citizens' Band (CB) radio equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU Parts 1& 2
ETSI EN 301489	Electromagnetic Compatibility (EMC) standard for radio equipment and services; Parts 1& 13

Schedule 5.1. CB station operational requirements.

Item	Channel	Carrier Frequency (MHz)	Restriction
1	11	27.085	Operation of a CB station must only employ AM with a transmitter power not exceeding 4 watts pZ with a necessary bandwidth not exceeding 6 kHz.
2	16	27.155	Operation of a CB station must only employ SSB modulation using:
			(a) LSB; and
			(b) a transmitter power not exceeding 12 watts pX; and (c) a necessary bandwidth not exceeding 3 kHz.
3	1	26.965	Operation of a CB station must only employ:
	2	26.975	(a) AM with a transmitter power not exceeding 4 watts pZ with a necessary bandwidth not exceeding 6 kHz; or
	3	26.985	(b) SSB modulation using USB or LSB with a transmitter power not exceeding 12 watts pX and with a necessary bandwidth not exceeding 3 kHz.
	4	27.005	
	5	27.015	

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	6	27.025	
	7	27.035	
	8	27.055	
	9	27.065	
	10	27.075	
	12	27.105	
	13	27.115	
	14	27.125	
	15	27.135	
	17	27.165	
	18	27.175	
	19	27.185	
	20	27.205	
	21	27.215	
	22	27.225	
	23	27.255	
	24	27.235	
	25	27.245	
	26	27.265	
	27	27.275	
	28	27.285	
	29	27.295	
	30	27.305	
	31	27.315	
	32	27.325	
	33	27.335	
	34	27.345	
	35	27.355	
	36	27.365	
	37	27.375	
	38	27.385	
	39	27.395	
	40	27.405	
4	1 to 80	$245+0.0125n$	(a) $n = 0$ to 79 (b) FM (F3E) with a transmitter power not exceeding one watt pZ with a necessary bandwidth not exceeding 11 kHz;

Chapter 6

Class license, PMR446

6.1. Description

PMR446 is intended to operate on collective frequencies shared by many users on an uncoordinated basis. The equipment is hand portable (no base station or repeater use) and uses integral antennas only in order to maximise sharing and minimise interference. PMR446 equipment operates in short range peer-to-peer mode and cannot be used neither as a part of infrastructure network nor as a repeater. PMR446 applications typically have a simplified functionality with a set of channels and a specification that allows usage to be exempted from individual licensing.

In this context, this TRBR Guideline provides the necessary provisions to the frequency band 446.000-446.200 MHz for both analogue and digital PMR446 radio equipment.

6.2. Requirement

- 6.2.1. Needs of general public to have access to personal mobile communication systems to communicate easily without individual license requirement;
- 6.2.2. Weak or lack of coverage of cellular mobile networks in non-populated and remote location where personal radiocommunication may become necessary;
- 6.2.3. There is possibility to designate some frequency channels to well-known PMR446 radios, as many other islands, in Vanuatu;
- 6.2.4. Prior designation of the band 446 – 446.1 MHz band to analog PMR446;
- 6.2.5. that ETSI has developed ETSI Technical Specification TS 103 236 for more robust receivers using Continuous Tone Controlled Signalling System (CTCSS) and Digitally Coded Squelch Signalling System (DCSS), TS 102 490 for digital PMR446 equipment with 6.25 kHz channel spacing and TS 102 361-1 for digital PMR446 equipment with 12.5 kHz channel spacing.

6.3. General Regulations

- 6.3.1. PMR446 radio equipment is exempted from individual licensing and anyone can use the radio equipment without any prior individual permission from the TRBR;
- 6.3.2. Applications requiring encrypted speech should be used with PMR446 radio equipment;
- 6.3.3. Analogue and digital PMR446 radio equipment is hand portable (no base station or repeater use) and uses integral antennas only in order to maximise sharing and minimise interference.

6.4. Technical Regulations

- 6.4.1. The band 446.0-446.2 MHz designated for the use of analogue PMR446 with a channel plan based on 12.5 kHz spacing where the lowest carrier frequency is 446.00625 MHz;
- 6.4.2. The band 446.1-446.2 MHz designated for the use of digital PMR446 with a channel plan based on 6.25 kHz and 12.5 kHz spacing where the lowest carrier frequencies are 446.103125 MHz and 446.10625 MHz respectively;
- 6.4.3. The band 446.0-446.2 MHz designated for the use of digital PMR446 with a channel plan based on 6.25 kHz and 12.5 kHz spacing where the lowest carrier frequencies are 446.003125 MHz (32 channels) and 446.00625 MHz (16 channels) respectively as of 1 January 2018;

- 6.4.4. All PMR446 equipment is hand portable and shall use only integral antenna and an effective radiated power not exceeding 500 mW, while any base station, repeater or fixed infrastructure use is excluded;
- 6.4.5. The following technical characteristics shall be applied for PMR446 applications in order to reduce the risk of harmful interference:
 - 6.4.5.1. All PMR446 radio equipment shall have reception capability;
 - 6.4.5.2. PMR446 radio equipment having Push-To-Talk (PTT) functionality capable of being latched 'on' shall apply a 180 seconds maximum transmitter time-out;
 - 6.4.5.3. PMR446 radio equipment having no Push-To-Talk (PTT) functionality shall apply a 180 seconds maximum transmitter time-out and VOX (Voice activation exchange) control;

6.5. Standards

- 6.5.1. A person must not operate a PMR446 radio unless the radio complies with each standard made under the Vanuatu National Table of Frequency Allocation (NTFA) including those provided in this section

The standards adopted for PMR446 radios

Standard	Title
ETSI EN 303 405	Land Mobile Service; Analogue and Digital PMR446 Equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
ETSI TS 103 236	Electromagnetic compatibility and Radio spectrum Matters (ERM); Continuous Tone Controlled Signalling System (CTCSS) and Digitally Coded Squelch Signalling (DCSS) system
ETSI TS 102 490	Electromagnetic compatibility and Radio spectrum Matters (ERM); Peer-to-Peer Digital Private Mobile Radio using FDMA with a channel spacing of 6,25 kHz with e.r.p. of up to 500 mW
ETSI TS 102 361-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Digital Mobile Radio (DMR) Systems; Part 1: DMR Air Interface (AI) protocol

Chapter 7

Class license, Cordless Telephones

7.1. Description

Despite the fixed nature of PSTN telephony terminals, there is no regulatory objection for limited mobility of subscriber's cordless telephone handset inside the given address for network subscription. Therefore, the radiocommunication range of cordless handset should be short and its connection shall be secured by means of suitable mechanisms as well as by use of interference mitigation techniques.

7.2. Considering

- 7.2.1. Public demands for using of cordless telephones and simplicity in operation of cordless telephones;
- 7.2.2. Variety of cordless telephones which are using different frequency bands that may lead harmful interference to other radiocommunication services;
- 7.2.3. Need to maintain short radiocommunication distance between handsets and base units of cordless telephones to allow frequency reuse in short distance;
- 7.2.4. Possibility of dense reuse of frequency bands that were allocated to the cordless telephones and interference-free operation of individual handsets within the coverage area of each other;
- 7.2.5. Need to obtain permission form the Regulator for importing of cordless telephones for domestic market or for production (in Vanuatu);

7.3. General regulations

- 7.3.1. Use of the cordless telephones in compliance with all conditions of in this Guideline, subject to not claiming protection from interference of other cordless telephones, does not require obtaining of an individual radio license;

7.4. Technical conditions

- 7.4.1. The cordless telephone shall be equipped with auto channel selection feature that enables device to choose a two-way unoccupied communication channel(s) from several available channels;
- 7.4.2. The maximum radiocommunication range of cordless handset shall not exceed 300 meters;
- 7.4.3. The technical conditions of emission of cordless telephones in the frequency band 2400-2483.5 MHz shall be compatible with schedule 7.1;
- 7.4.4. The technical conditions of emission of cordless telephones in the frequency band 5825-5725 MHz shall be compatible with schedule 7.2;
- 7.4.5. The technical conditions of emission of DECT cordless telephones in the frequency band 1880-1900 MHz shall be compatible with schedule 7.3;
- 7.4.6. Each cordless telephone shall use a unique identification code to communicate with corresponding handsets, exclusively;
- 7.4.7. Fixed units and cordless handsets of cordless telephones shall use built-in non-directional antennas. Use of outdoor antennas for fixed units and cordless handsets is forbidden;
- 7.4.8. Use of cordless telephones with transmitting power more than levels specified in this Guideline is subject to radio license issued by TRBR;

7.5. Standard

- 7.5.1. The air interface standard of cordless telephone shall be compatible with schedule 7.4;
- 7.5.2. Other characteristics of fixed unit of cordless telephones shall be compatible with agreed relevant standards of national fixed telephony network;
- 7.5.3. Radiation exposure limits of fixed units and cordless handsets of cordless telephones shall be in conformance with national standard for non-ionized radiation.

7.6. Schedules

Schedule 7.1. Emission specification in the frequency band 2400 - 2483.5 MHz (§7.4.3)

Spectrum Spreading scheme	Emission Designation	Maximum spectral power density (dBm in 3 kHz)	Attenuation of unwanted radiation respect to fundamental or peak (RMS average) emission level (in the 100 kHz bandwidth)	Maximum processing gain (dB)	Maximum output power of transmitter (dBm)	Number of hopping channels	Hopping channel spacing	Minimum 6 dB bandwidth	Dwell Time (Second /Channel in 30 sec)	20 dB Bandwidth of hopping channel
FHSS	83M5F7WCT	--	20 dBc (30 dBc)	--	20	15	25 kHz or 20 dB bandwidth channel whichever is greater	--	0.4	25 kHz minimum 1 MHz maximum
DSSS	83M5F7WCT	8	20 dBc (30 dBc)	10	20	15	--	500 kHz	--	--
DSSS/ FHSS	83M5F7WCT	8	20 dBc (30 dBc)	17	20	15	25 kHz or 20 dB bandwidth channel whichever is greater	500 kHz	0.4	25 kHz minimum 1 MHz maximum

Schedule 7.2. Emission specification in the frequency band 5725 - 5825 MHz (§7.4.4)

Spectrum Spreading scheme	Emission Designation	Maximum spectral power density (dBm in 3 kHz)	Attenuation of unwanted radiation respect to fundamental or peak (RMS average) emission level in the 100 kHz bandwidth	Maximum processing gain (dB)	Maximum output power of transmitter (dBm)	Number of hopping channels	Hopping channel spacing	Minimum 6 dB bandwidth	Dwell Time (Second /Channel in 30 sec)	20 dB Bandwidth of hopping channel
FHSS	100MF7WCT	--	20 dBc (30 dBc)	--	20	75	25 kHz or 20 dB bandwidth channel whichever is greater	--	0.4	25 kHz minimum 1 MHz maximum
DSSS	100MF7WCT	8	20 dBc (30 dBc)	10	20	75	--	500 kHz	--	--
DSSS/ FHSS	100MF7WCT	8	20 dBc (30 dBc)	17	20	75	25 kHz or 20 dB bandwidth channel whichever is greater	500 kHz	0.4	25 kHz minimum 1 MHz maximum

Schedule 7.3. DECT Emission specification in the frequency band 1880 – 1900 MHz (§7.4.5)

Center frequencies (MHz)	Attenuation of adjacent channel interference to normal transmitter power	Normal transmitter mean power	Frequency tolerance	Unwanted emissions	Receiver sensitivity, maximum	Receiver sensitivity, minimum	Class of emission	Modulation
$f_n = 1897.344 - 1.728n$ $n = 0, 1, 2, \dots, 9$	40 dB	24 dBm (250 mW)	50 kHz	See EN 300 175-2	-33 dBm	-93 dBm	F1W, F7W	GFSK

Schedule 7.4. Standards

Frequency Band (MHz)	Standard
2400 – 2483.5	FCC 15.247
5725 – 5825	47 CFR § 15.245
1880 – 1900	EN 300 175, EN 300 176

Chapter 8

Regulation for Short Range Point to Point Wireless Links in Fixed radiocommunication Service, in the frequency band 24 GHz (24.0-24.25 GHz)

8.1. Description

The first maxima in atmospheric absorption happens around radio frequency 24 GHz in which expected to have shorter radiocommunication range compared to the adjacent frequency bands even with similar radiated power. Therefore, as stated in ITU Radio Regulations Article 5 No. 5.150, the frequency band 24.0-24.25 GHz identified for ISM applications. Considering possibility of small-sized and high-gain antenna in this frequency range, the frequency reuse distance could be kept small if the transmitter power restricted below 1 W. In point of spectrum management trend for short range microwave links, the interference resolution can be eased by technical mitigation means such as automatic power control. Therefore, for short-range microwave links in ISM 24 GHz band, it is beneficial to leave frequency coordination users instead of going through long procedure of issuing individual radio license. In this case, registration of fixed stations would be enough. Moreover, since this band is more interested in by ICT network operator for easy and low-cost data transmission, it is preferred to limit its operation to the concerned operators.

8.2. Considering

- 8.1.1. Allocation of the frequency band 24.05-24.25 GHz to radiolocation service on a primary basis and to earth exploration satellite service on a secondary service;
- 8.1.2. Identification of the frequency band 24.0-24.25 GHz for ISM application in the ITU-R Article 5 footnote 5.150;
- 8.1.3. Utilization of the frequency band of this **Guideline** by non-specific SRDs, having radiated power restricted to 100 mW e.i.r.p.;
- 8.1.4. Utilization of the frequency band of this Guideline by automotive radar, low power traffic control radars in and other non-specific low power devices under the corresponding SRD regulations;
- 8.1.5. Increasing demand by data communication service providers for using of short range high rate data communication links in the frequency band 24.0-24.25 GHz;
- 8.1.6. Possibility of interference free operation short range radio links with efficient spectrum management by applying a simplified regulation together with enough technical conditions;
- 8.1.7. Need to have highest number of users benefiting advantages of radio frequency channels for fixed wireless systems, including point-to-point radio links in the 24 GHz frequency band.

8.3. Regulations

- 8.3.1. Only the telecommunication service providers that received their operational license by decision of TRBR are within the scope of this section;
- 8.3.2. Since the frequency band 24.0-24.25 GHz is already identified for ISM applications, operation of this is subject to no claim for protection against interference;

- 8.3.3. Assigning any number of RF channels in the 24.0-24.25 GHz frequency bands for nationwide usage is not allowed;
- 8.3.4. Compliance with technical conditions in section 6 of this **Guideline** is mandatory;
- 8.3.5. Deployment of point to multipoint systems within the frequency band under this **Guideline** is not allowed;
- 8.3.6. Utilization of the frequency band 24.0-24.25 GHz by radio links is subject to registration by submission of information in Schedule 8.1 for recording of utilization in TRBR database and receiving TRBR permission;
- 8.3.7. The validity of permissions granted by TRBR under this **Guideline**, lasts up to the validity of license of telecommunication service provision, as understood from §8.3.1;
- 8.3.8. If the operation of equipment under this license ceased, user shall inform TRBR and it shall request TRBR to cancel relevant registration;
- 8.3.9. Consideration of regulations set by municipalities for antenna mast/tower structure, location, analogy of tower shape, etc. is mandatory and use of existing city infrastructures for installation of antennas is preferred, to the extent possible;
- 8.3.10. For installation of equipment in the frequency band of this **Guideline** in the 1 km (if tower not used) or 2 km (if individual tower used) distance to airports and aeronautical radionavigation equipment, permission of Aviation authority is mandatory, in addition to compliance with other conditions of this **Guideline**;
- 8.3.11. Users are obliged to employ only standardized and approved radiocommunication equipment;
- 8.3.12. Payment of a registration-fee for each equipment, is mandatory in accordance with the Spectrum Pricing regulation;

8.4. Technical Conditions

- 8.4.1. Frequency band under this Guideline is 24.0-24.25 GHz;
- 8.4.2. The maximum radiated power is 33 dBm e.i.r.p. (2000 mW) and the maximum radiated power density is 20 dBm/10 MHz e.i.r.p.;
- 8.4.3. Attenuation values of maximum permitted spurious domain emission power level relative to total mean power P (in Watts) shall be above the value calculated from $43 + 10 \log(P)$ in dBc should be 36 dBc or any other value that has been determined in relevant standard, whichever is less stringent;
- 8.4.4. The 3dB maximum beamwidth of the main lobe of antenna is 3.5°;
- 8.4.5. In case of using antenna with beamwidth sharper than 3.5°, the output power of transmitter shall be reduced in a way that the maximum radiation power of antenna not exceeding the value provided in §8.4.2;
- 8.4.6. Antenna height above the ground level shall be more than 40 m;
- 8.4.7. Transmitters shall be equipped with power control mechanism to keep the minimum radiation level necessary for the system, in accordance with §8.4.2 and §8.4.3 above;
- 8.4.8. Any alternation in technical specification of approved equipment that increase the radiation power and extend operational frequency range, beyond the restriction of this Guideline, is forbidden.

8.5. Importing Regulations

- 8.5.1. Only companies that have obtained the authorization for Importing, Purchasing / Selling, and Production/Selling of Radiocommunication Equipment, are eligible to import equipment under this **Guideline**;
- 8.5.2. Importers, before import, shall be assured from the existence of a valid Type Approval certificate for the equipment that they want to import, otherwise they have to apply for and obtain that certificate;

8.6. Standards

- 8.6.1. The equipment under this **Guideline** shall comply with the provided technical conditions;
- 8.6.2. Retesting of equipment under this Guideline in an accredited laboratory is necessary to assure its compliance with the mandatory standards and technical conditions, if the radiocommunication specification of approved equipment altered for any reasons such as by repairing;
- 8.6.3. The relevant equipment under operation shall comply with mandatory standards;

8.7. Schedules

Schedule 8.1. Registration form for utilization of the frequency band 24.25-24.0 GHz

Important Note: Applicants must provide its information in section 1 and information of the network in other sections. The electronically approved registration must be printed and kept by the applicant. Otherwise, the filled form shall be submitted to TRBR for approval and receive a registration number.

1. Applicant Information

Applicant Name: _____ Date: _____

Telecom. Service Provision License No: _____ Issuing Date: _____ Expiry Date: _____

Licensee Address: Province: _____ City: _____ Street: _____

Fax No. : _____

E-mail Address: _____@_____

2. Information of Stations

A1. First Station	A2. second Station
Address: _____	Address: _____
Latitude (ddNmmss): __°N__'__''	Latitude (ddNmmss): __°N__'__''
Longitude (ddEmmss): __°E__'__''	Longitude (ddEmmss): __°E__'__''
Building height __+tower height = total __ m	Building height __+tower height = total __ m
Antenna Power Gain: ___ dBi	Antenna Power Gain: ___ dBi
Equipment serial no: _____	Equipment serial no: _____
Link length between two stations in km with one significant decimal precision: ____.	

3. Equipment

Trade mark of equipment: _____ Model: _____

Date:

Name:

Signature:

Chapter 9

Class License, Regulation for Short Range Point to Point Wireless Links in Fixed Radiocommunication Service in the frequency band 60 GHz (57.0-64.0 GHz)

9.1. Description

The atmospheric absorption in the frequency band 57-64 GHz reach to its peak at 60 GHz due to resonance of dry air molecules, which is 25.5 dB higher than in 24 GHz. By consideration of additional 8 dB attenuation due to frequency difference, there is approximately 33.5 dB higher attenuation in 60 GHz band with respect to 24 GHz. Accordingly, this frequency band is a suitable choice for short range broadband communication. IEEE802.11ad were developed for communicating 1 Gbps in this frequency band. The radiated power is selected to be enough to protect passive sensors at 3 meters distance with $9\mu\text{W}/\text{cm}^2$ and $18\mu\text{W}/\text{cm}^2$ (corresponding to 10 W and 20 W respectively). Manufactures are now trying to improve performance and capacity of devices in this frequency band and currently there are several brands available with suitable price. Use of this frequency band was already regulated in USA, Canada, Japan, South Korea, Europe and Australia. Therefore, indoor and outdoor utilization of this frequency range are to be regulated by means of this Guideline in Vanuatu.

Considering progressive developments and slight difference between indoor and outdoor technical specifications, this Guideline provide flexibility for portable and short-range devices.

9.2. Considering

- 9.2.1. Allocation of the frequency band 57.0-64.0 GHz to the fixed and mobile and also parts of that to the radiolocation, inter-satellite, earth exploration satellite (passive) and space research (passive) services on a primary basis;
- 9.2.2. The highest gas absorption at 60 GHz below 100 GHz frequency range, and high reuse possibility with manageable interference;
- 9.2.3. Identification of the frequency band 61.0-61.5 GHz for ISM application in the ITU-R Article 5 footnote 5.138;
- 9.2.4. Global demand to increase capacity of data transmission by WiFi, in line with IEEE802.11ad standard by extension of its operational frequency bands to 60 GHz range;
- 9.2.5. Determination of the frequency range 57.0-64.0 GHz for indoor low power broadband data transmission systems by the CEPT standard EN 302 567 with maximum radiated power of 40 dBm mean e.i.r.p.;
- 9.2.6. Minimum reuse distance of 5 km for point to point gigabit links in the 60 GHz frequency band;
- 9.2.7. Tens of dB penetration loss of outdoor signals penetrating indoor through walls, windows even window glasses which reduce possibility of harmful interference to indoor communication in the frequency band 57.0-64.0 GHz;
- 9.2.8. Growing interest of high-speed data service providers for short range broadband short range links;

9.3. Regulations

- 9.3.1. Only the telecommunication service providers who received their operational license by decision of TRBR are authorized to establish physical network by use of license-free spectrum, are within the scope of this **Guideline**;
- 9.3.2. The frequency bands 57-64 GHz designated for outdoor point to point wireless data transmission on shared basis with equal right for those ICT licensees permitted (by license conditions or by Commission individual decision) to provide internet service via WiFi subject to observing security requirements which has been stipulated in their license. Such utilization is on no claim and no protection basis;
- 9.3.3. Compliance with the technical conditions provided in §9.4 of this Guideline is mandatory;
- 9.3.4. Operation of point to multipoint system in the frequency band 57-64 GHz is forbidden;
- 9.3.5. Utilization of the frequency band 57-64 GHz by radio links in accordance with this **Guideline** is subject to registration by submission of information in Schedule 9.1 for saving of utilization in TRBR database and receiving TRBR permission;
- 9.3.6. The validity of permissions granted by TRBR under this **Guideline**, lasts up to the validity of license of telecommunication service provision, as understood from §9.3.1;
- 9.3.7. If the operation of equipment under this license ceased, user shall inform TRBR and it shall request to cancel relevant registration;
- 9.3.8. Consideration of regulations set by municipalities for antenna structure, location, analogy of tower shape, etc. is mandatory and use of existing city infrastructures for installation of antennas is preferred, to the extent possible;
- 9.3.9. For installation of equipment in the frequency band of this **Guideline** in the 1 km (if tower not used) or 2 km (if individual tower used) distance to airports and aeronautical radionavigation equipment, permission of Aviation authority is mandatory, in addition to compliance with other conditions of this **Guideline**;
- 9.3.10. Users are obliged to employ only standardized and approved radiocommunication equipment;
- 9.3.11. Payment of a registration-fee for each equipment, is mandatory in accordance with the Spectrum Pricing regulation;

9.4. Technical Conditions

- 9.4.1. Frequency band under this Guideline is 57.0-64.0 GHz;
- 9.4.2. The maximum radiated power is 82 dBm e.i.r.p. minus 2 dB for each dB reduction of antenna gain from 51 dBi. The maximum peak radiated power is 85 dBm e.i.r.p. minus 2 dB for each dB reduction of antenna gain from 51 dBi;
- 9.4.3. Attenuation values of maximum permitted spurious domain emission power level relative to total mean power P (in Watts) shall be above the value calculated from $43 + 10 \log(P)$ in dBc should be 36 dBc or any other value that has been determined in relevant standard, whichever is less stringent;
- 9.4.4. Transmitters shall be equipped with power control mechanism to keep the minimum radiation level necessary for the system, in accordance with §9.4.2 and §9.4.3 above;
- 9.4.5. Any alternation in technical specification of approved equipment that increase the radiation power and extend operational frequency range, beyond the restriction of this **Guideline**, is forbidden;

- 9.4.6. Utilization of the frequency band 57.0-64 GHz for point to point links under this **Guideline** shall not make interference within the out of band domain on operation of stations in adjacent frequency bands;

9.5. Importing Regulations

- 9.5.1. Importing, trading, retailing or manufacturing of equipment under this **Guideline** is limited to the corporations that have obtained authorization for importing, trading, retailing or manufacturing of radiocommunication equipment. It is emphasized that use of equipment imported illegally is forbidden;
- 9.5.2. Licensees in §9.3.1 who were obtained the permission under §9.3.6 are allowed to import equipment under this **Guideline** for their own use;
- 9.5.3. Importers, before import, shall be assured from the existence of a valid Type Approval certificate for the equipment issued by TRBR that they want to import, otherwise they have to apply for and obtain that certificate.

9.6. Standards

- 9.6.1. The equipment under this **Guideline** shall comply with the provided technical conditions;
- 9.6.2. Retesting of equipment under this **Guideline** in an accredited laboratory is necessary to assure its compliance with the mandatory standards and technical conditions, if the radiocommunication specification of approved equipment altered for any reasons such as by repairing;
- 9.6.3. The relevant equipment under operation shall comply with mandatory standards;
- 9.6.4. Only companies that have obtained the authorization for Importing, Purchasing/Selling, and Production/Selling of Radiocommunication Equipment are eligible to import equipment under this **Guideline**.

9.7. Schedules

Schedule 9.1. Registration form for utilization of the frequency band 57.0-64.0 GHz

Important Note: Applicants must provide its information in section 1 and information of network in other sections. The electronically approved registration must be printed and kept by applicant. Otherwise, the filled form shall be submitted to TRBR for approval and receive a registration number.

1. Applicant Information

Applicant Name: _____ Date: _____

Telecom. Service Provision License No: _____ Issuing Date: _____ Expiry Date: _____

Licensee Address: Province: _____ City: _____ Street: _____

E-mail Address: _____@_____

2. Information of Stations

A1. First Station	A2. second Station
Address: _____	Address: _____
Latitude (ddNmmss): __°N __' __"	Latitude (ddNmmss): __°N __' __"
Longitude (ddEmmss): __°E __' __"	Longitude (ddEmmss): __°E __' __"
Building height __+tower height = total __ m	Building height __+tower height = total __ m
Antenna Power Gain: ___ dBi	Antenna Power Gain: ___ dBi
Equipment serial no: _____	Equipment serial no: _____

Link length between two stations in km with one significant decimal precision: ____.

3. Equipment

Trade mark of equipment: _____ Model: _____

Date:

Name:

Signature:

Chapter 10

Class License on Utilization of the Frequency Bands 2400-2483.5 MHz, 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz in the Access Networks

10.1. Description

The frequency bands 2400 – 2500 MHz and 5725 – 5875 MHz designated for ISM applications, as stated in ITU Radio Regulations No. 5.150. Almost all ISM applications in 2.4 GHz ISM band choose 2400 – 2483.5 MHz frequency range to provide protection of space services in the adjacent band 2483.5 – 2500 MHz. Currently, both 2.4 GHz and 5.8 GHz ISM bands are widely used in local area networks (RLAN), municipal area networks (MAN) and wide area networks (WAN) for data communication. Although these bands are known as 'license-free,' however as it is common for other parts of radio frequency spectrum, equipment operating within these frequency bands are subject to fulfill certain regulations and technical specifications. The frequency bands 5150-5350 MHz and 5725-5470 MHz, in addition to above frequency bands, are designated to similar applications, based on ITU RR Resolution 229. IEEE802.11x are family of common air-interface standard that are employed in above frequency bands.

The following provisions are related to the utilization conditions of different types of point-to-point and point-to-area radiocommunication networks, which are able to employ spreading spectrum technique with the aim of simplification and clarification of existing regulations, improvement of spectrum utilization efficiency and enabling of more devices to use above frequency bands with acceptable transmission quality.

10.2. Considering

- 10.2.1. ITU RR No. 5.150 which identifies frequency bands 2400-2483.5 MHz and 5725-5875 MHz for use by ISM applications and ITU RR Resolution 229 on use of frequency bands 5150-5250 MHz, 5250-5350 MHz and 5470-5725 MHz by WAS and RLAN;
- 10.2.2. Availability of low cost equipment and devices capable for data communication within the frequency bands 2400-2483.5 MHz, 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz;
- 10.2.3. Use of appropriate radio frequency channel arrangement could reduce degradations may happen by interference, in the systems employing multiple radio frequency channels;
- 10.2.4. Economic advantages could be gained if worldwide harmonized radio frequency channel arrangement used for point to point radio links in fixed service;
- 10.2.5. The necessity to enable service provision to the maxim number of users in the frequency bands 2400-2483.5 MHz, 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz;
- 10.2.6. Demands for use of license-free devices under this **Guideline** are increasing and it requires to simplify regulations and technical conditions;
- 10.2.7. It is possible to identify the network that provides data service via regulating of communication SSID in WiFi air-interface;

10.3. Requirement

- 10.3.1. All devices under this class license shall comply with conditions provided in sections 10.5 and 10.6. In the frequency bands 5250-5350 MHz, 5470-5725 MHz and 5725-5850 MHz; these devices shall be capable to identify radar signals and to cease co-channel operation automatically, if identified any;
- 10.3.2. Considering provision 10.3.6, the frequency bands 2400-2483.5 MHz, 5150-5250 MHz and 5250-5350 MHz designated for indoor wireless data transmission on shared basis with equal right for all users. Utilization of these mention frequency bands cannot claim protection from other unlicensed or license services on the same band;
- 10.3.3. The frequency bands 2400-2483.5 MHz and 5725-5850 MHz designated for outdoor point-to-point wireless data transmission on shared basis with equal right for all users. Utilization of these frequency bands is subject to TRBR permit and notification via schedule 10.1. Utilization of these mention frequency bands cannot claim protection from other unlicensed or license services on the same band;
- 10.3.4. The frequency bands 2400-2483.5 MHz, 5250-5350 MHz and 5470-5725 MHz for outdoor point to multipoint and point to area purpose. Also, the frequency bands 2400-2483.5 MHz, 5250-5350 MHz and 5725-5850 MHz designated for wireless data transmission on shared basis with equal right for those ICT licensees have permission (by license conditions or by TRBR individual decision) to provide internet service via WiFi subject to observing security requirements which has been stipulated in their license. Utilization of above frequency bands does not require a permit but should be notified to TRBR via schedules 10.1 and 10.2 by relevant ICT licensees. Utilization of these mention frequency bands cannot claim protection from other unlicensed or license services on the same band;
- 10.3.5. Provision of indoor public or outdoor point to point, point to multipoint or point to area wireless internet service by the use of frequency bands provided in this Guideline, without authentication of end user in a way that explained in provision 10.3.6, is forbidden. Breaching condition of this provision results service-stop and impose of penalties as given in owned service license;
- 10.3.6. Provision of wireless internet service under provision 10.3.5 for end users is subject to acquiring a contact number belonged to the end user, registered with domestic fixed telephony or mobile operator; to assure access to a confident resource for information such as name, national ID and address of end user. Moreover, service providers are obliged to register contact number, end user network location, time interval of access. These information should be saved for further use by TRBR or authorized organizations, at least for six months;
- 10.3.7. Users stopping their operation before this Guideline is updated must inform TRBR
- 10.3.8. The indoor networks observing technical conditions of this Guideline, which are not causing harmful interference outside the buildings, do not required to register schedule 10.2 information. User should employ highest endeavor not to cause harmful interference on operation of other networks;
- 10.3.9. Use of radiocommunication equipment corresponding to §10.3.3 and §10.3.4 at a distance less than 1 km if antenna tower was not used, or 2 km if antenna tower is used, from the airports and corresponding radionavigation equipment, requires prior coordination with Aviation authority;
- 10.3.10. Any alternation in technical specification and circuits of radiocommunication equipment that increase operational power level and frequency range from licensed limits of this Guideline , is forbidden;

- 10.3.11. Users of radiocommunication networks pursuant to this Guideline is responsible for unauthorized access to their network;
- 10.3.12. Users are obliged to use those equipment having approved standards by TRBR and they are responsible for the noncompliance of equipment with approved standards and regulations;
- 10.3.13. Not only user but also importer is responsible for noncompliance of SDR specification of equipment with this Guideline or their vulnerability to penetration to security mechanism. This failure case, is an import-license breaching case and access points having noncompliance would be plumped;
- 10.3.14. Users are obliged to comply with other regulations, which are relevant to this Guideline.

10.4. Import Regulations

- 10.4.1. Importing, trading, retailing or producing of SDR equipment under this Guideline is limited to ICT licensees (only for their use) and to the corporations that have obtained authorization for importing, trading, retailing or manufacturing of radiocommunication equipment;
- 10.4.2. Importer of equipment under this Guideline should be assured from the compliance of equipment with approved standards, before importing;
- 10.4.3. Selling of devices, regulated in this Guideline, by retailers holding business permit, is permitted under the full responsibility of one of the owners of authorization for importing, trading, retailing or manufacturing of radiocommunication equipment, subject to advance notification via notice form in Annex 10.1.

10.5. Technical conditions

Frequency band (MHz)	Maximum Power delivered to antenna	Operation Mode	Maximum e.i.r.p.	Type of Environment
2400 – 2483.5	1W	Point to point, point to multipoint and point to area	4 W	Indoor/Outdoor
5150 – 5350	200 mW	Hot spot	200 mW	Indoor
5250 – 5350	1 W	Point to point, point to multipoint and point to area	4 W	Outdoor
5470 – 5725	100 mW	WLAN	100 mW	Indoor/Outdoor
5725 – 5875	1 W	Point to point	4 W	Outdoor

10.6. Standards

- 10.6.1. Technical specifications of equipment under this Guideline must comply with conditions stipulated in this Guideline;
- 10.6.2. In case of any change in radiating specification of equipment under this Guideline, for any reasons including repairing, re-examination of equipment in a certified lab is mandatory for compliance verification;
- 10.6.3. The device considered for use as fixed access point should be approved by TRBR;

- 10.6.4. Having an acceptable robust internal security mechanism for approval of SDR devices is mandatory, among other conditions stipulated in this Guideline;
- 10.6.5. The employment of security mechanisms satisfying TRBR concerns is generally with manufacturer or importer, however, TRBR may determine preferred security mechanisms;
- 10.6.6. Importers are obliged to recall for repair or for removal from market (in case of impossibility for repair), after domestic sale, if SDR equipment experience sever fault in their security mechanism;
- 10.6.7. Inclusion name of Vanuatu in the list of countries for automatic upload of embedded predefined adjustments of air interface specification is recommended;

The standards adopted for 2.4 GHz and 5.8 GHz devices

No	Name	Title
1	FCC-part 15.247&15.407	Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications Enhancements for Higher Throughput
2	ETSI EN 302 502	Wireless Access Systems (WAS); 5,8 GHz fixed broadband data transmitting systems; Harmonized Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
3	ETSI EN 301 893	Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive"
4	ETSI TR 102 651	Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Guide to the implementation of Dynamic Frequency Selection (DFS)
5	ECC REC (06)04	Use of the band 5 725-5 875 MHz for Broadband Fixed Wireless Access (BFWA)
6	ECC Decision (04)08	ECC Decision of 09 July 2004 on the harmonized use of the 5 GHz frequency bands for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs)
7	ITU-R Resolution 229	Use of the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service for the implementation of wireless access systems including radio local area networks

Annex 10.1
Registration Form of Retailer and Maintenance Agents
SDR devices in the bands 2.4 GHz and 5.8 GHz

(\$10.4.3)

to be provided as an official letter

From:

To: TRBR

Date:

No.:

Hi,

I herein, ID No.: CEO of having authorization for importing, trading, retailing or manufacturing of radiocommunication equipment No.: valid until: nominate seller Mr./Ms. shop name: holding business license No.: issued on date: by: address: and contact No. as retailer of my 2.4 GHz and 5.8 GHz devices as well as deliverer of maintenance service. I also take responsibility of any violation and shortcoming from regulation without any excuse.

Date:

Name:

Signature:

Schedule 10.1. Registration of stations using 2400-2483.5 MHz, 5250-5350 MHz and 5725-5850 MHz (Point to Point systems) (§10.3.3 and §10.3.4)

Important Note: Applicants shall fill in all requested information of stations. The issued electronic registration approval should be printed out by applicant for future use. Otherwise, the completed form shall be submitted to the relevant office of TRBR for receiving a registration number.

1. Applicant Information

Corporate Name: _____ Date: _____
 Name of the corporate official having highest position (as network manager): _____
 Corporate Address: Province: _____ City: _____ Street: _____
 Contact number with city code: _____
 Fax No. : _____
 E-mail Address: _____@_____

2. Station Information

A1. First Station	A2. second Station
Address: _____	Address: _____
Latitude (ddNmmss): __°N__'__"	Latitude (ddNmmss): __°N__'__"
Longitude (ddEmmss): __°E__'__"	Longitude (ddEmmss): __°E__'__"
Building height __+tower height = total __ meter	Building height __+tower height = total __ meter
Antenna Power Gain: __ dBi	Antenna Power Gain: __ dBi
Equipment serial no: _____	Equipment serial no: _____
SSID: _____	

3. Technical Specification of Network

Frequency band: 5250 - 5350 MHz, 5725-5850 MHz, 2400-2483.5 MHz,
 Device mark: _____ Device Model: _____
 Maximum output power of transmitter: _____ mW
 Data content type: Internet, Sound and picture, Intranet, etc.
 Purpose of use: commercial, Non-commercial

Date:

Name:

Signature:

Schedule 10.2. Registration of stations using 2400-2483.5 MHz, 5250-5350 MHz and 5470-5725 MHz (Point to Multi point and Point to Area systems) (§10.3.4 and §10.3.8)

Important Note: Applicants shall fill-in all requested information of stations. The issued electronic registration-approval should be printed out by applicant for future use. Otherwise, the completed form shall be submitted to the relevant office of TRBR for receiving a registration number.

1. Applicant Information

Corporate Name: _____
 Service license: Number: _____ Issuing date: _____ Expiry date: _____
 Corporate Address: Province: _____ City: _____ Street: _____
 Contact number with city code: _____
 Fax No. : _____
 E-mail Address: _____@_____

2. Base Station Information

Address: _____
 Latitude (ddNmmss): __°N __' __"
 Longitude (ddEmmss): __°E __' __"
 Building height __+tower height = total __ meter
 Antenna Power Gain: __ dBi
 Frequency band: 2400-2483.5 MHz, 5250 - 5350 MHz, 5725-5470 MHz
 Maximum output power of transmitter: _____ mW
 Device mark: _____ Device Model: _____
 SSID: _____

3. Remote Stations (in case of Point to Multipoint only)

No	Station Name	Address	Longitude (ddEmmss): __°E __' __'	Latitude (ddNmmss): __°N __' __"	Sum of building height above ground level and tower height (in meter)
...

Date:

Name:

Signature: