Spectrum Management Authority

Technical and Operational Rules for Radio Communication Equipment using the Licence-Exempt Bands

1. Introduction

The declaration of licence-exempt spectrum in Jamaica is aimed at:

- Encouraging more efficient and creative use of the spectrum,
- Enabling cost effective and innovative technologies, and
- Encouraging competition and the creation of new business opportunities in the delivery of wireless technologies and services.

The realization of these objectives is highly dependent on the proper regulation of the spectrum. The purpose of such regulation is to ensure that users of the designated frequencies do not interfere with each other or with other licensed users. The licence-exempt frequency bands will be regulated by controlling the use of the spectrum through technical standards, certification of the transmission equipment, monitoring and enforcement.

2. Purpose

The purpose of these rules is to establish the technical and operational framework for the use of licence-exempt spectrum, including compliance requirements. The bands to be operated on a licence-exempt basis are:

- 902-928 MHz.
- 2.4- 2.4835 GHz.
- 5.725-5.850 GHz.

3. Summary

The following arrangements are proposed for radio frequency management in the licence-exempt spectrum.

- Low powered radio communication devices may be operated in the licence-exempt bands on a no-interference, no-protection basis. They may not cause radio interference and cannot claim protection from interference.

- No licence fee will be required for operation in licence-exempt spectrum.

- Radio Systems may operate within the band 902 -928 MHz, with a maximum power level of 1 Watt with bandwidth of 250 KHz and 0.25 Watts with bandwidth of 500 KHz.

- Radio Systems may operate within the band 2.4 -2.4835 GHz, with a maximum power level of 0.125Watts and minimum bandwidth of 1 MHz.

- Radio Systems may operate within the band 5.725- 5.850 GHz. with a maximum power level of 0.75Watts and a minimum bandwidth of 1 MHz.

- Radio Systems with design specifications which conform to the technical conditions as stated herein, will not be the subject of individual licences, but must satisfy the requirements for type approval as established by the Spectrum Management Authority.

- Enforcement of the rules related to the licence-exempt spectrum will be carried out pursuant to the Telecommunications Act 2000 and the Radio and Telegraph Control Act.

- Penalties shall be applied to entities found in breach the rules governing the use of the licence-exempt spectrum.

4. Definitions

For the purposes of this document,

- **Urban** refers to the Kingston Metropolitan Region, inclusive of the parishes of Kingston, St. Andrew and St. Catherine.

- **Rural** refers to all areas outside of that defined as urban.

- **Public Radio System –** A public radio system is one where the beneficiary of the system might not be the licensee or anyone concerned with the business of the licensee. The licensee may receive a payment, consideration or other benefit, wither directly through a contractually managed fee or indirectly through standing charges levied at a point of sale of any equipment to be connected to the system or by any other means, in payment for the service of providing and maintaining the radio facility for use by third parties.

- **Private Radio System -** A private radio system is one where the purpose and exclusive benefit of use of the radio system is solely in the interest of the licensee's business. This may include use by third parties such as contractors where the work/radio use of that third party is on behalf of the licensee and does not include any traffic that is not connected with the business of the licensee. Communication should be solely concerned with the business of the licensee, who will receive no payment, consideration or other benefit from any third party in respect of the provision of radio communication facilities.

- **Short Range Devices (SRD's) -** This covers a variety of radio devices providing either unidirectional or omni-directional communication (point to point or point to multipoint) and which, due to their low transmitter power, have a low risk of interference to other devices.

5. Technical Requirements

The licence-exempt bands are,

902 – 928 MHz

2.400 – 2.4835 GHz and

5.725 – 5.850 GHz.

The modulation methods of the equipment that will be allowed in these bands are those methods that minimize the mutual interference caused by multiple devices operating in the same band with geographic overlap. In this regard the two (2) most common forms of spread spectrum techniques are:

(i) Frequency Hopping Spread Spectrum , FHSS, and

(ii) Direct Sequence Spread Spectrum, DSSS.

902 – 928 MHz Band

For systems operating with FHSS technique, if the minimum bandwidth of the hopping channel is 250 kHz, then the minimum number of hopping channels shall be 50, the average time in each hopping channel shall be 0.4 second within a 20 second period, and the maximum peak output power shall be 1Watt. For FHSS systems with hopping channel of minimum bandwidth of 500 kHz, the minimum number of hopping channel shall be 25, with the average time in each hopping channel being 0.4 seconds within a 10 second period, and the maximum peak output power shall be 0.25 Watt.

2.4 – 2.4835 GHz Band.

The hopping channels shall have a minimum bandwidth of 1 MHz. If the minimum number of hopping channel is 15, then the average time within the hopping channel shall be 0.4 sec. times 15 (hopping channels), and the power shall be 0.125 Watt. If the minimum number of hopping channel is 75, then the average time within the hopping channel shall be 0.4 sec. times 75.

5.725 – 5.850 GHz Band

The hopping channels shall have a minimum bandwidth of 1 MHz. The minimum number of hopping channels shall be 75, the average time within each hopping channel shall be 0.4 sec. in a 30 sec. period. The maximum output power level shall be 0.75 Watts.

DSSS systems operating in all three bands shall occupy at least 500 kHz at the 6 dB point, with the maximum peak output power being 0.5 Watt in urban and 1 Watt in rural areas.

Out of Band Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum system is operating, the radio frequency power that is produced by the system shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

FREQUENCY BAND	SPREAD SPECTRUM MODULATION ECHNIQUE	MINIMUM BANDWIDTH OF HOPPING CHANNEL	AVERAGE TIME IN EACH HOPPING CHANNEL	MINIMUM NUMBER OF HOPPING CHANNELS	MAXIMUM POWER LEVEL
902 - 928MHz	Frequency Hopping	250KHz	0.4 sec within 20 sec period	50	1 Watts
		500KHz	0.4 sec within 10 sec period	25	0.25 Watts
2.4 - 2.4835GHz	Frequency Hopping	1MHz	0.4 sec within 0.4 (15) (no. of Hopping Channel/sec)	15	0.125 Watts
			0.4 sec within 0.4 x 75 sec	75	0.5 Watts

FREQUENCY BAND	SPREAD SPECTRUM MODULATION ECHNIQUE	MINIMUM BANDWIDTH OF HOPPING CHANNEL	AVERAGE TIME IN EACH HOPPING CHANNEL	MINIMUM NUMBER OF HOPPING CHANNELS	MAXIMUM POWER LEVEL
5.725 - 5.850 GHz	Frequency Hopping	1MHz	0.4 sec in 30 sec period	75	0.75 Watts
All 3	Direct Sequence Spread Spectrum	500KHz for 6db	N/A	N/A	0.75 Watts

6. Applicable Radio Systems and Devices

6.1 The following radio communication equipment can be operated in licence exempt spectrum.

- All low powered, short range devices (SRD's) which currently operate within these bands and do not require licensing[1] by the Spectrum Management Authority. These include cordless phones, gate openers etc.
- Devices operated under IEE 802.11b standard, used for WLAN applications both for indoor (linking of communication equipment within an office) or outdoor applications. These include, WiFi, WiMax, and Bluetooth.

[1] All devices are required to be type approved.

7. Standards

7.1 In addition to the power levels, licence exempt equipment would be required to operate to the standards IEEE 802.11b, Bluetooth or any other standard developed for WLAN equipment or short range devices.

7.2 Equipment should also comply with one or more of the following standards (see Appendix 1).

- FCC Code of Regulations 47. Section 15. 247 (American Standard)
- ETSI EN 300 328-1 VI.3.1 (2001-12) (European Standard)
- AS / NZS 4771: 2000 (Australian Standard)
- RSS-210 (Canadian)

8. Certification and Registration

8.1 All equipment must satisfy the SMA's type approval requirements as presented in Appendix 2. The process of type approval involves an assessment of the technical specifications of the device to ensure that it is suitable for operations in the licence exempt bands in Jamaica and that it conforms to the required international standards.

8.2 To facilitate individual importation of radio equipment which are not for purposes of re-sale, the Department of Customs will hold a list of pre-approved equipment which satisfy the type approval requirements of the SMA

8.2 All entities which intend to offer a service to the public must first obtain the requisite service provider licence from the Office of Utilities Regulation, before registering with the Authority.

9. Interference Management

9.1 Devices shall not emit more energy than is required for their intended functions. The limits stated in these rules may not prevent harmful interference under all circumstances.

9.2 The operation of equipment within the licence exempt spectrum would be on a no-interference, no-protection basis. This means that licence exempt users of the spectrum must not cause interference to other licensed users, nor could they claim protection from interference from such users.

9.3 Users of licence-exempt devices are required to cease operation immediately should harmful interference occur to licensed users of the radio spectrum.

9.4 The parties responsible for the equipment should employ the minimum field strength necessary and provide greater attenuation of unwanted emissions than required by these rules in line with good engineering practice. In any case, devices should not exceed the limits established by these rules.

9.5 Complaints of interference by licence exempt users will not be investigated by the Spectrum Management Authority.

10. Enforcement

10.1 All activities within the licence exempt spectrum must comply with the Telecommunications Act 2000, the Radio and Telegraph Control Act, where applicable and regulations thereto, as well as these rules as prescribed by the Spectrum Management Authority.

10.2 It is an offence under the Telecommunication Act 2000 to install and use unauthorized radio communication equipment, within the declared unlicensed bands.

10.3 If an equipment type does not comply with any of the approved standards as stated in these rules, it is regarded as “non-standard”. Operating non-standard equipment is an offence under the Telecommunications Act 2000.

11. Sanctions/ Penalties

11.1 Entities found to be operating outside of the technical standards as prescribed in these rules will be subject to seizure of such radio communication equipment.

11.2 Entities which are operating outside of the technical standards and which are causing undue interference to licensed users of the spectrum will be subject to seizure of such radio communication equipment and a fine not exceeding $500,000[2].

11.3 Entities which are found to be operating non-standard equipment within the licence-exempt spectrum will be subject to seizure of such radio communication equipment and a fine not exceeding $500,000.

11.4 Entities which engage in the sale of radio communication equipment, not type approved by the Authority for use in the declared licence-exempt bands will be subject to seizure of such radio communication equipment and a fine not exceeding $500,000.

Prepared by
Spectrum Management Authority
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[2] Fines are in keeping with Section 69, Part 3 of the Telecommunications Act 2000.

Appendix 1

FCC Code of Regulations 47. Section 15 (American Standard)
Subsection: 15.247 - Operation within the bands 902-928 MHz, 2400-2483.5GHz, and 5725 – 5850GHz

ETSI EN 300 328-1 V1.3.1 (2001-12) (European Standard)
Electromagnetic compatibility and Radio Spectrum Matters (ERM):
Wideband transmission systems
Data Transmission Equipment
Operating in the (900 MHz, 2.4 GHz and 5GHz bands)
Essential requirements under Article 3.2 of the Radio & Telecommunications Terminal Equipment directives.

AS/NZS 4771: 2000 (Australian Standard)
Technical characteristics and test conditions for data transmission equipment operating in the 900MHz, 2.4 MHz and 5.8 MHz bands and using spread spectrum modulation techniques. The compliance level for these devices is level 2. This level applies to devices whose non-compliance would have moderate risk of causing interference to other devices using the radio frequency spectrum. Level 2 only apply to transmission equipment using spread spectrum modulation techniques.

RSS – 210 (Canadian Standard)
Section 6.2.2
See FCC Code of Regulations: 47 Sect. 15 for test and certification.

Appendix 2

Spectrum Management Authority
Type Approval Certification

What is Type Approval Certification and why is it required?

Type approval of radio communication equipment is the authorization of equipment which has never been granted a licence for manufacturing or importation, by verifying the compliance of the equipment against the standards which have been adopted by our Administration. It ensures that the equipment from various manufacturers conform to appropriate standards and principles of product safety and will not interfere with other equipment or networks.

It is mandatory to obtain type approval for any radio equipment intended for use in Jamaica.

What types of equipment require type approval certification?

Radio communication equipment used in land (fixed and mobile), maritime mobile, aeronautical mobile and amateur services requires type approval.

Standards

Type approval for Radio Communication equipment in Jamaica is done by recognition of type approval test reports which are prepared according to international standards. In-country testing is not required.

Radio Standard:
Jamaica recognizes the international standards set by the following bodies:
FCC: Federal Communications Commission (USA)
ANSI: American National Standards Institute
ETSI: European Telecommunications Standardization Institute
ITU: International Telecommunications Union

Electromagnetic Compatability (EMC) Standard:
Radio communication equipment should have EMC standard in accordance with international standards.

Electrical Safety Standard:
Radio communication equipment should have Electrical Safety standard in accordance with international standards.

Steps to Certification

Applications are accepted from:
- Manufacturer of equipment or authorized institution.
- An individual user for a specific piece of equipment.

Step 1
Written applications from an individual or company to be sent to:

Spectrum Management Authority
26 Belmont Road,
Kingston 5.
Jamaica, W.I.
Tel: 876 929 8550
Fax: 876 960 8981

Application forms are downloadable from our website at www.sma.gov.jm

Step 2
Provide the required technical information/documentation

Step 3
SMA will acknowledge receipt of application within one working day.

Step 4
SMA will review application and request additional documentation if required.

Step 5
SMA will issue Type Approval Certificate with Type Approval ID number.

Documentation/Information and Other Requirements

The following information and supporting documentation are required to begin processing the application for certification.

- Name/Address of Manufacturer
- Authorization from Manufacturer (in case where applicant is an authorized institution)
- Equipment Specification – name, type, frequency bands, output power
- FCC or other Standards Body Certification
- Electromagnetic Compatibility (EMC) Report
- Safety Report (optional)
- Commissioning Report.
- User Manual
- Country of Origin verification

Labeling/Marking requirements

Labeling/marking is the process of specifying a registration number on the radio communication equipment which is made or imported into the country. This is an optional requirement.

Applicable fee

The fee for Type Approval Certification is US$250.00 per model. This is payable to the:

Spectrum Management Authority
26 Belmont Road
Kingston 5
Jamaica W.I.

Processing Time

The Certificate will be processed and dispatched within 15 business days after receipt of **all** documentation.

Terms and Conditions of Certification

- The certificate is valid under condition that the equipment being granted approval is identical to the type tested one.

- Any changes to the name or model of the type approved equipment will require a new type approval. This involves reapplication with revised supporting documents. If the technical specifications have not been amended, reference can be made to original type approval. However, the applicant must submit a letter of declaration stating that the technical specifications for the old named/model equipment is the same as the new name/model equipment.

- The Certificate may be revoked if holders use it beyond approved scope or if determined to have been obtained illegally.

Other Licensing Requirements

Applicants may be required to obtain other licences to make, import or install radio communication equipment depending on the regulation governing such equipment.

Declaration: All information presented to the SMA will be treated as confidential and will not be disclosed to third parties.

Spectrum Management Authority
Application for Type Approval of Radiocommunication Equipment

Date of Application: …….

Part 1. **Applicant Information**

Name of Applicant: ……..…….
Address: …….…….....
……
……
On behalf of (if applicant is an authorized institution):……
Telephone no : ..……
Facsimile no: ……
E-mail address: ..……..…….....

Part 2. **Attached Documents and Equipment**

- ☐ Technical Specifications of Equipment
- ☐ A copy of the test report or certification of the technical characteristics of the radio communication equipment, issued by a recognized test or certification body.
  Name of test or certification institution.……..……
  Country ….…….……..
- ☐ A copy of accreditation certificate of test or certification body
- ☐ EMC Report
- ☐ Safety Report
- ☐ Commissioning Report
- ☐ User Manual (may be optional if test procedure outlines the operations of the equipment)
- ☐ Letter of Authorization (if applicant is an Authorized institution).
- ☐ A physical sample of the equipment requiring type approval
- ☐ Others (please state)
  ……..……
- ☐ Processing fee of US$250.00 per model for type approval certification

Part 3 Radio communication Equipment Information

3.1 Equipment: ……..…… 3.2 Type: …….....

3.3 Brand Name: …… 3.4 Model:.……

3.5 Manufacturer: …….. 3.6 Country ……..

3.7 Frequency Band Transmit: ……..…… MHz

Receive: ……..…….…… MHz

3.8 ITU Emission Designator……..

3.9 Proposed use of Equipment……

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I hereby certify that all information provided above and the document attached hereto are true and correct, and I shall comply with the policies and procedures on Type Approval Certification of Radio equipment and any regulation or order relevant to radio communication equipment in Jamaica.

Name (in block capitals)……

Applicant/ Authorized person

Signature ……

Position …….

Date ……/……/…….

All information presented to the SMA will be treated as confidential.

For Spectrum Management Authority use only

Applicant code: …….

Application Approved: ……..

Date of Approval: ……...

Type Approval ID Number: ……...

Date sent to client: ……...

Payment received: ……...

Signature of Certifying Officer: ……