TECHNICAL STANDARDS FOR FAMILY RADIO SERVICE.

May 27th, 2008

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION

SAINT LUCIA

TABLE OF CONTENTS

1.0 INTRODUCTION

1.0.1 Family Radio Service (FRS) is a two-way, low power radio, short-distance radio communications service for facilitating voice and non-voice communications. The purpose of this service is to improve options available to the public and provide an economical radio service for *non-essential* radio communications. The possible uses of FRS include family and group outings, sporting and community events, etc. FRS users are required to have a licence to operate, but there is no frequency authorization requirement as FRS operates on common or shared frequency bands. Users of FRS are permitted to use the frequencies of 462 MHz and of 467 MHz for selective radio communications. In FRS no operator or station has priority in the service, thus requiring a responsible and cooperative approach by all persons using the service.

1.0.2 The National Telecommunications Regulatory Commission was created under the Telecommunications Act 2000 to oversee the telecommunications sector in Saint Lucia. It is therefore responsible for ensuring adherence to the legislation by service providers and other telecommunications users, including FRS radio operators.

1.0.3 The Commission has prepared this document to make available relevant technical information to the users of the FRS within Saint Lucia. The FRS technical standards seek to provide guidance to users of this radio communication service.

2.0 SCOPE

2.0.1 This document provides the technical standards to which each FRS radio unit must comply to operate within Saint Lucia. The technical standards include acceptability of equipment, frequency band assignments, frequency channels, emission classes, transmission power and bandwidth limitations.

2.0.2 In the event of any inconsistencies between this document and the Act or Regulations, the provisions of the Act or applicable Regulations shall take precedence.

3.0 RESOURCES

3.0.1 Material from the following sources was used to compile this document:

- The Telecommunications Act 2000;
- The Telecommunications (Terminal Equipment and Public Networks) Regulations, 2002;
- The National Telecommunications Regulatory Commission Procedures Manual;

- The Code of Federal Regulations (Title 47, Part 95);
- Industry Canada RSS-210;

4.0 GLOSSARY OF TERMS

***Act*:** The Telecommunications Act [No. 27 of 2000] in the jurisdiction of Saint Lucia.

***Applicant*:** A person applying for a licence or a frequency authorisation under the Act.

Application: An application for a licence or frequency authorisation, including a modification or renewal of a licence or frequency authorisation under the Act.

***Authorized bandwidth*:** The maximum permissible bandwidth of a transmission.

***Autopatch*:** Is a feature of two-way radio repeater to access an outgoing telephone connection.

***Band*:** A range of frequencies.

***Bandwidth*:** The width of a frequency band (outside of which the mean power of the transmitted signal is attenuated at least 26 dB below the mean power if the transmitted signal is within the band).

***Commission*:** The National Telecommunications Regulatory Commission, established under section 8 of the Act.

ECTEL: Eastern Caribbean Telecommunications Authority.

***E.R..P*:** An abbreviation for Effective Radiated Power. The product of the power supplied to the antenna and its *gain relative to a half-wave dipole* in a given direction.

FRS: An abbreviation for Family Radio Services.

***FRS Unit**:* Is a personal, two-way, low power voice communications service for facilitating family and group activities.

GMRS: An abbreviation for General Mobile Radio Services.

Harmful interference: Any radiation or induction which endangers the functioning of radio navigation service or of a safety service or obstructs or repeatedly interrupts a radio service operating in accordance with the approved

Table of Frequency Allocation and with the Telecommunications (Spectrum Management) Regulations, 2002.

Limiter: Is a circuit that allows signals below a set value to pass unaffected, as in a Class A amplifier, and clips off the peaks of higher signals that exceed this set value, as in a Class C amplifier.

Minister*:* Minister responsible for Telecommunications.

Necessary bandwidth: For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

Out-of-band emission: Emission on a frequency or frequencies immediately outside the *necessary bandwidth* which results from the modulation process, but excluding spurious emissions.

ppm: An abbreviation for parts per million.

PRS: An abbreviation for Personal Radio Services.

Regulations*:* Refers to the Regulations that have been made under the Telecommunications Act, No 27 of 2000 in the jurisdiction of Saint Lucia.

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.

Telecommunications: Any form of transmission, emission or reception of signs, texts, images and sounds or other intelligence of any nature by wire, radio, optical or other electromagnetic means.

Telemetry: A one-way transmission of measurements at a distance from the measuring instrument.

Transmitter: Any apparatus that converts electrical energy received from a source into radio frequency energy capable of being emitted.

UHF*:* An abbreviation for Ultra High Frequency. Refers to a band of frequencies that range from 300 MHz to 3000 MHz.

Unwanted emissions: Spurious emissions and out-of-band emissions as defined in this section.

User: Any person who operates a radio communications transceiver.

5.0 EQUIPMENT REQUIREMENTS

5.0.1 The telecommunications equipment intended for use in the FRS must have type approval certificate granted by the Commission and must meet the requisite technical standards established for FRS in Saint Lucia. FRS units are normally handheld units with a fixed vertical helical or "rubber ducky" antenna and operate in the UHF band.

6.0 ROLE OF THE COMMISSION

6.0.1 The National Telecommunications Regulatory Commission (NTRC) was established under the Telecommunications Act 2000 to regulate the telecommunications sector in Saint Lucia. Based on the functions of the Commission as outlined in section 12 of the Act, and relevant to the family radio service, the Commission is required to

(i) be responsible for technical regulations and the setting of technical standards of telecommunications and ensure compatibility with international standards;

(ii) plan, supervise and manage the use of the radio frequency spectrum in conjunction with ECTEL, including the assignment and registration of radio frequencies to be used by all stations operating in St. Lucia or on any ship, aircraft or other floating or airborne contrivance or spacecraft registered in Saint Lucia; and

(iii). Receive and review applications for licences and advise the Minister accordingly.

6.0.3 The Commission is therefore keen that persons comply with the telecommunications legislation. The Act does not apply to programme content and scheduling, and so the Commission has no jurisdiction in respect of the information conveyed via telecommunications networks and operations. In sum, the Commission's responsibility is to ensure that the legal and technical requirements for the establishment of telecommunications networks and the provision of telecommunications services are satisfied.

7.0 TECHNICAL STANDARDS

7.1 DEFINITION

7.1.1 FRS is a personal, two-way, low power, voice and data communications service for facilitating family and group activities. FRS will permit handheld operation on 14 frequencies in and around the GMRS radio service.

7.2 ACCEPTIBILITY OF EQUIPMEMT.

7.2.1 FRS units intended for use in Saint Lucia must have Type Approval certificate granted by the Commission and must meet the requisite technical standards outlined in this document.

7.3 FRS UNIT AND TRANSMITTER ANTENNA.

7.3.1 The antenna of each FRS unit must be an integral part of the transmitter. The antenna must have no gain (as compared to a half-wave dipole) and must be vertically polarized.

7.3.2 FRS radios are required to use only 2.5 kHz deviations, half the usual narrow-band FM deviation of 5 kHz. Transmit audio frequency response is limited to 3.125 kHz.

7.3.3 The user must not make, or have made, any internal modification to a FRS unit. Any internal modification cancels the Type Approval certification and voids the licence to operate the unit in the FRS.

7.3.4 The user may not attach any power amplifier, external antenna, or other apparatus to a FRS unit that has not been Type Approve certified as part of that FRS unit.

7.3.5 Sub audible tone and other selective calling methods are permitted. Autopatch or other telephone interconnect is **prohibited**.

7.4 FREQUENCY CHANNELS

7.4.1 The FRS channels are all simplex and are listed in table 7.4. Channel numbers 1 to 7 are shared with GMRS.

Channel Number	Frequency (MHz)	Remarks
1	462.5625	Shared with GMRS
2	462.5875	Shared with GMRS
3	462.6125	Shared with GMRS
4	462.6375	Shared with GMRS
5	462.6625	Shared with GMRS
6	462.6875	Shared with GMRS
7	462.7125	Shared with GMRS
8	467.5625	
9	467.5875	
10	467.6125	
11	467.6375	
12	467.6625	
13	467.6875	
14	467.7125	

Table 7.4: Channels of FRS

7.5 EMISSION CLASSES

7.5.1 An FRS unit may transmit only emission types *F3E, F1D* and *F2D.*

7.5.2 The peak frequency deviation shall not exceed ±2.5 kHz. The limiter shall be followed by a low-pass filter to remove unwanted harmonics.

7.6 EMISSION BANDWIDTH

7.6.1 The authorized bandwidth for an FRS unit is 12.5 kHz.

7.7 OUTPUT POWER

7.7.1 The maximum permissible transmitter output power under any operating conditions is 0.500 W e.r.p. The radio shall be equipped with integral antenna.

7.8 UNWANTED EMISSIONS

7.8.1 Unwanted emissions shall be attenuated at least below the unmodulated carrier power in accordance with the following:

- At minimum 25 dB (measured with a bandwidth of 300Hz), on any frequency removed from the centre of the 12.5 kHz bandwidth by more than 50% up to and including 100% of the bandwidth.

- At least 35 dB on any frequency removed from the centre of the centre of 12.5 kHz by more than 100% up to and including 250% of the bandwidth.

- At least 43 dB + 10 $\log_{10}$ (T [*]) dB, on any frequency removed from the centre of 12.5 kHz bandwidth by more than 250%.

7.9 FREQUENCY TOLERANCE

7.9.1 The carrier frequency tolerance shall be better than ±5 ppm.

[*] carrier power measured in watts

ANNEX A

GENERAL PROVISIONS

The following general provisions encompass the Family Radio Service:

(i). Under the current regulations, users of FRS require a licence for operating their FRS units, and the FRS units should have type approval certificate granted by the Commission. Frequency authorization however is not a requirement for users to operate their FRS units.

(ii). The user is responsible for all communications that is made with the FRS unit. The user must share each channel with other users. No channel is available for the private or exclusive use of any user.

(iii). A user of a FRS unit, shall not use a FRS unit in connection with any activity which is against the Act.

(iv). A user of FRS shall, at all times and on all channels, give priority to emergency communication messages concerning the immediate safety of life or the immediate protection of property.

(v). No FRS unit may be interconnected to the public switched network.

(vi) FRS units shall not be designed to transmit data in store-and-forward packet operation mode.

TYPES OF COMMUNICATIONS

(i). A user may use a FRS unit to conduct two-way voice communications with another person. A user may use the FRS unit to transmit one-way communications only to establish communications with another person, send an emergency message, provide traveller assistance, make a voice page, or to conduct a brief test.

(ii). Non-voice emission is only permitted for selective calling or tone-operated squelch to establish or continue a voice communication, digital data transmission of location information or text messaging, and is subject to the following restrictions:

(a) The FRS unit may transmit tones to make contact or to continue communications with a particular FRS unit. If the tone is audible (more than 300 Hertz), it must last no longer than 15 seconds at one time. If the tone is sub audible (300 Hertz or less), it may be transmitted continuously only while the user is talking.

(b) The FRS unit may transmit digital data containing location information, or requesting location information from one or more other FRS units, or containing a brief text message to another specific FRS unit. Digital data transmissions must be initiated by a manual action or command of the user. However, a FRS unit receiving an interrogation request may automatically respond with its location. Digital data transmissions shall not exceed 1 second, and shall be limited to one transmission within a 30-second period. However, a FRS unit may automatically respond to more than one interrogation requests received within a 30-second period.