TECHNICAL STANDARDS FOR CITIZEN BAND RADIO SERVICE.

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NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION

SAINT LUCIA

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1.0 INTRODUCTION

1.0.1 The Citizen Band (CB) Radio service is a system of HF radio communications between individuals on a selection of 40 channels within the single 27 MHz (11 meter) band. CB operators are required to have a licence to operate, but there is no frequency authorization requirement as CB operates on a common or shared frequency band. Users of CB are permitted to use the frequencies of 26.965 MHz to 27.405 MHz for radio communications. In the Citizen Band 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 CB radio operators.

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

2.0 SCOPE

2.0.1 This document provides the technical standards to which each CB radio unit must comply. The technical standards include acceptability of equipment, frequency band assignments, frequency channels, emission classes, modulation, transmission power output 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-136;

4.0 GLOSSARY OF TERMS

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

***Antenna*:** Means the radiating system (for transmitting, receiving or both) and the structure holding it up (tower, pole or mast). It also means everything else attached to the radiating system and the structure.

***Applicant*:** An entity 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.

Application fees :The fees payable by applicant for a licence or frequency authorisation.

***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).

***Carrier power*:** The average TP during one unmodulated RF cycle.

***CB*:** An abbreviation for Citizens Band Radio Service.

***CB transmitter*:** A transmitter that operates or is intended to operate at a station authorized in the CB.

***Channel frequencies*:** Reference frequencies from which the carrier frequency, suppressed or otherwise, may not deviate by more than the specified frequency tolerance.

***Crystal*:** Quartz piezo-electric element.

***Crystal controlled*:** Use of a crystal to establish the transmitted frequency.

***Commission*:** The National Telecommunications Regulatory Commission.

***dB*:** The symbol for decibels. It is a logarithmic unit of measurement that expresses the magnitude of a physical quantity (usually power) relative to a specified or implied reference level.

ECTEL: Eastern Caribbean Telecommunications Authority.

EIRP**:** Effective Isotropic Radiated Power. Antenna input power times gain for free space or in-tissue measurement configurations, expressed in watts, where the gain is referenced to an isotropic radiator.

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.

HF**:** An abbreviation for High Frequency. Refers to a band of frequencies that range from 3 MHz to 30 MHz.

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.

Mean power**:** TP averaged over at least 30 cycles of the lowest modulating frequency, typically 0.1 seconds at maximum power.

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.

Operato**r:** Any person who operates a radio communications transceiver.

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.

Peak envelope power**:** TP averaged during one RF cycle at the highest crest of the modulation envelope.

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

RF**:** An abbreviation for Radio Frequency.

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.

***TP*:** RF transmitter power expressed in watts, either mean or peak envelope, as measured at the transmitter output antenna terminals.

Transmitter: Apparatus that converts electrical energy received from a source into RF energy capable of being radiated.

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

5.0 ROLE OF THE COMMISSION

5.0.1 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 CB 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.

5.0.2 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.

6.0 TECHNICAL STANDARDS

6.1 DEFINITION

6.1.1 The Citizens Band (CB) Radio Service is a personal, two-way, HF, voice communications service for personal or business activities of the general public. The CB Radio Service may also be used for voice paging.

6.2 ACCEPTABILITY OF EQUIPMENT

6.2.1 The telecommunications equipment intended for use in the Citizen Band must have type approval certificate granted by the Commission and must meet the requisite technical standards established for Citizen Band Radio Service in Saint Lucia.

6.3 FREQUENCY CHANNELS

6.3.1 Transmitter power determination circuitry and programming controls in any CB transmitter must be internal to the transmitter and must not be accessible from the exterior of the transmitter operating panel or from the exterior of the transmitter enclosure.

6.3.2 CB stations are allowed to transmit only on the frequencies indicated in table 6.3. Note that channel 9 may be used only for emergency communications or for traveller assistance.

The 40 CB channels are as follows:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355

Channel	Frequency (MHz)	Channel	Frequency (MHz)
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

Table 6.3: Showing CB Frequency Channels

6.3.2 Each CB transmitter must be maintained within a frequency tolerance of ±0.005%.

6.4 EMISSION CLASSES AND MODULATION REQUIREMENTS

6.4.1 A CB transmitter may transmit only emission types A1D, H1D, J1D, R1D, A3E, H3E, J3E and R3E. A non-voice emission is limited to selective calling or tone operated squelch tones to establish or continue communications.

6.4.2 When the emission type A3E is transmitted, the modulation must be greater than 85% but must not exceed 100%. Simultaneous amplitude modulation and frequency or phase modulation of a transmitter are not permitted. Also if the CB transmitter has a TP of greater than 2.5 W, the transmitter must automatically prevent the modulation from exceeding 100%.

6.4.3 Each CB transmitter that transmits emission types H3E, J3E or R3E must be capable of transmitting the upper sideband. The capability of also transmitting lower sideband is permitted.

6.5 EMISSION BANDWIDTH

6.5.1 An authorized bandwidth of 4 kHz is applicable to the following types of emissions:
H1D, J1D, R1D, H3E, J3E or R3E; and a bandwidth of 8 kHz for the following emission types:
A1D or A3E.

6.6 OUTPUT POWER

6.6.1 No CB transmitter shall exceed 4 Watts carrier power when transmitting A1D or A3E emissions or 12 Watts peak envelope power (PEP) for emissions H1D, J1D, R1D, H3E, J3E or R3E.

6.6.2 Carrier power of 4 W in the 26–27 MHz frequency band, except on channel frequency 27.255 MHz where 25 W is allowed.

6.6.3 Each CB transmitter which transmits emission type H3E, J3E or R3E must automatically prevent the transmit power from exceeding 12 W peak envelope power or the manufacturer's rated peak envelope power, whichever is less.

6.7 UNWANTED EMISSIONS

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

For emission types A1D and A3E

(i). At least 25 dB on any frequency removed from the centre of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.

(ii). At least 35 dB on any frequency removed from the centre of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.

(iii). At least 53 dB + 10 $\log_{10}$ (T [*]) dB, on any frequency removed from the centre of the authorized bandwidth by more than 250%.

(iv). At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

For the emission types: H1D, J1D, R1D, H3E, J3E, R3E

(i). At least 25 dB on any frequency removed from the centre of the authorized bandwidth by more than 50% up to and including 150% of the authorized bandwidth.

(ii). At least 35 dB on any frequency removed from the centre of the authorized bandwidth by more than 150% up to and including 250% of the authorized bandwidth.

(iii). At least 53 dB + 10 $\log_{10}$ (T) dB, on any frequency removed from the centre of the authorized bandwidth by more than 250%.

(iv). At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

6.8 EXTERNAL CONTROLS

6.8.1 Only the following external transmitter controls, connections or devices will normally be permitted in a CB transmitter:

[*] carrier power measured in watts

(i) Primary power connection. (Circuitry or devices such as rectifiers, transformers, or inverters which provide the nominal rated transmitter primary supply voltage may be used without voiding the transmitter certification.)
(ii) Microphone connection.
(iii) Antenna terminals.
(iv) Audio frequency power amplifier output connector and selector switch.
(v) On-off switch for primary power to transmitter. This switch may be combined with receiver controls such as the receiver on-off switch and volume control.
(vi) Upper/lower sideband selector switch (for a transmitter that transmits emission type H3E, J3E or R3E).
(vii) Carrier level selector control (for a transmitter that transmits emission type H3E, J3E or R3E.) This control may be combined with the sideband selector switch.
(viii) Channel frequency selector switch.
(ix) Transmit/receive selector switch.
(x) Meter(s) and selector switch(es) for monitoring transmitter performance.
(xi) Pilot lamp(s) or meter(s) to indicate the presence of RF output power or that the transmitter control circuits are activated to transmit

6.8.2 The Commission may authorize additional controls, connections or devices after considering the functions to be performed by such additions.

6.9 EQUIPMENT LABELS

6.9.1 CB radios must have at least the label shall contain the following:

(i). The manufacturer's name or trade name or brand name;
(ii). The model number or name;
(iii). The serial number; and
(iv). Type Approval reference identification/markings.

6.9.2 The serial number of each CB transmitter should be engraved on the transmitter chassis.

6.10 LINEAR AMPLIFIERS

6.10.1 CB operators may not attach external radio frequency power amplifiers (linear amplifiers) to type-certified CB transmitter in any way.

6.11 CB STATIONS AND TRANSMITTER ANTENNAS

6.11.1 Modifications to Transmitters:

- An operator must not make or have any one else make any internal modification to a CB transmitter.

- Internal modification does NOT include:
  (i) Repair, or servicing of a CB station transmitter; or
  (ii) Changing plug-in modules which were type-accepted as part of the CB transmitter.

- An operator must not operate a CB transmitter which has been modified by anyone in any way, including modification to operate on unauthorized frequencies or with illegal power.

6.12 ANTENNA AND AERONAUTICAL OBSTRUCTION CLEARANCE

6.12.1 If the antenna is mounted on a hand-held portable unit, none of the following limitations apply. If the antenna is installed at a fixed location, it (whether receiving, transmitting or both) must comply with either one of the following:

(i). The highest point must not be more than 6.10 meters (20 feet) higher than the highest point of the building or tree on which it is mounted; or

(ii) The highest point must not be more than 18.3 meters (60 feet) above the ground.

6.12.2 If a CB station is located near an airport, and if the antenna structure is more than 6.1 meters (20 feet) high, the operator may have to obey additional restrictions. The highest point of an antenna must not exceed one meter above the airport elevation for every hundred meters of distance from the nearest point of the nearest airport runway. Differences in ground elevation between the antenna and the airport runway may complicate this formula.

6.12.3 Installation and removal of CB station antennas near electric power lines is dangerous. For safety, follow the necessary safety instructions with installing an antenna.

6.13 SERVICE TO TRANSMITTERS AND ANTENNAS

6.13.1 A CB operator may adjust an antenna to your CB transmitter and may make radio checks (One-way transmissions for a short time in order to test the transmitter).

6.13.2 Each internal repair and each internal adjustment to a Type approval certified CB transmitter must be made by or under the direct supervision of a person recognized by the Commission as a Terminal Equipment Dealer.

6.13.3 Except as provided in paragraph below in this section, each internal repair and each internal adjustment of a CB transmitter in which signals are transmitted must be made using a non-radiating antenna (Dummy Load).

6.13.4 Brief test signals (signals not longer than one minute during any five minute period) using a radiating antenna may be transmitted in order to:

(i). adjust an antenna to a transmitter;

(ii). detect or measure radiation of energy other than the intended signal; or

(iii). tune a receiver to your CB transmitter.

ANNEX A

GENERAL PROVISIONS

The following general provisions encompass the Citizen Band Radio Service:

(i) A CB operator requires a licence for operating CB equipment, and the CB equipment should have Type Approval certificate granted by the Commission. Frequency authorization however is not a requirement for operators to operate CB equipment.

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

(iii) A CB operator shall not use a CB unit in connection with any activity which is against the Act.

(iv) CB operators 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) CB operators must limit communications to the minimum practical time. Communications between two CB stations must limit their communications to no more than five (5) continuous minutes and after the end of communications they must not transmit for at least one (1) minute.

(vi) CB operators need not identify themselves, however they are *encouraged* to identify themselves by the following means:

(a). Call sign which begins with J6 followed by three numbers;
(b). The name of the operator;
(c). The name of the organization and any applicable operator unit number;
(d). Operators may use a nickname (handle) only in conjunction with the methods of identification listed above (a-c) of this sub-section.

(vii). CB operators may not operate a CB transmitter by radio remote control. CB operator may operate a CB transmitter by wireline remote control if the operator obtains specific approval in writing from the Commission. In order to obtain the Commission's approval the operator must show why he/she needs to operate a CB transmitter by wireline remote control.

(viii) CB operators may connect their CB transmitter to a telephone if the users comply with **ALL** of the following:

(a)The CB user must be present at the CB transmitter and MUST:-

(1) manually make the connection (the connection cannot be made by remote control);

(2) supervise the operation of the transmitter during the connection;

(3) listen to each communication during the connection; and

(4) stop all communications if there are operations in violation of these rules.

(b) Each communication during the telephone connection must comply with all of these rules.

(c) The CB operator must obey any restriction that the telephone service provider places on the connection of a CB transmitter to a telephone.

(d) The CB transmitter which is to be connected to a telephone must not be shared with any other CB station.

(e) If the CB user is to connect a CB transmitter to a telephone, the user must use a phone patch device which has been approved by the Commission.

TYPES OF COMMUNICATIONS

A CB operator may use a CB station to conduct two-way voice communications. An operator may use a CB station to establish communications about:

(i). personal or business activities, or those of members of immediate family;
(ii). emergencies;
(iii). travel assistance.

An operator may use a CB station to transmit a tone signal only when the signal is used to make contact, or to continue communications. If the signal is an audible tone, it must last no longer than 15 seconds at one time. If the signal is a sub-audible tone, it may be transmitted continuously only as long as the operator is talking.

An operator may use a CB station to transmit one-way communications (messages not intended for two or more CB stations) only for emergency communications, traveller assistance, brief tests (radio checks) or voice paging.

An operator must not use a CB station in the following manner:

(i). in connection with activity which is against the Act;
(ii). to transmit obscene, indecent or profane words, language or meaning;
(iii). to interfere intentionally with the communications of another CB station;
(iv). to transmit one-way communications, except in the case for emergency.