

**MEMORANDUM CIRCULAR
NO. 01-01-98**

SUBJECT: LICENSING GUIDELINES AND PROCEDURES FOR SHORT-RANGE RADIO SERVICE (SRRS).

Pursuant to the provisions of Republic Act No.7925 Act No. 3846 as amended, Executive Order No. 546, and other applicable laws, the Commission hereby promulgates the following guidelines and procedures in the licensing of portable radio transceiver in the short range radio service:

A. Definition of Terms

For the purpose of this Circular, the following terms are defined hereunder:

1. **Short Range Radio Service (SRRS)** – a private radio communication system in the Land Mobile Service limited to portable transceiver for short range communications.
2. **SRRS Special Permit** - an authority issued by the National Telecommunications Commission to individuals and/or entities for the possession and operation of a radio station under the Short Range Radio Service.
3. **Type Acceptance** - a certification issued by the Commission for SRRS radio equipment complying to the SRRS Technical Standards and Specifications set forth as Attachment A of this memorandum and where equipment has already been type approved by an administration whose certification is acceptable. This process does not require laboratory testing and issuance is based on the type approval certificate issued by the administration whose certification is acceptable and test reports issued by the competent authorities/administrations.
4. **Type Approval** - a certification issued by the Commission for SRRS equipment complying to the Technical Standards and Specifications set forth as Attachment A of this memorandum. This process requires laboratory testing.

B. Technical Parameters

1. The frequencies channels allocated for SRRS are on shared usage and Non-Interference Basis.
2. The use of linear amplifier/booster and external antenna for SSRS is strictly prohibited.
3. The radio equipment for SRRS shall comply with the following:
 - a. Fixed and non-extendable frequency range.



- b. Portable type with limited maximum transmitter output power not to exceed 3 watts.
 - c. Frequency modulated utilizing voice emission.
 - d. Duly type approved/accepted by the Commission
4. The frequency band allocated for SSRS shall be 325.0000 - 325.4875 MHz using 12.5 KHz channeling plan.
 5. The technical specification of the radio equipment shall conform with the Technical Specification in Attachment - A of this Circular.
 6. Any radio transceiver that meets the technical specification of SSRS shall be allowed under this service, after having been type accepted/approved by the Commission.

C. Application for Type Approval/Acceptance

1. Type Acceptance

Applicants are required to submit a fully accomplished type acceptance application form together with the following items:

- Type acceptance fee
- Certified copy of the type approval certificate from an administration/authorities whose certification is acceptable together with a certified copy of the test results
- Full technical/service documents giving detailed description of the equipment's technical specifications, method employed in testing the equipment, schematic diagrams, board components layout, and components parts list.
- Color photographs of the equipment, in sufficient size (not less than 20 cm. x 25 cm.), to show clearly the equipment's external and internal (with dust cover removed) appearance.

2. Type Approval

Applicants are required to submit a fully accomplished type approval application form together with the following items:



- Type approval fee
 - Model or prototype of radio transceiver to be type approved (with test accessories)
 - Full technical/service documents giving detailed description of the equipment's technical specifications, method employed in testing the equipment, schematic diagrams, board components layout, and components parts list.
 - Color photographs of the equipment, in sufficient size (not less than 20 cm. x 25 cm.) to show clearly the equipment's external and internal (with dust cover removed) appearance.
3. Application forms shall be secured from the Commission
 4. Markings

A drawing shall be submitted to detail equipment label and information to be contained on the label that will be affixed to the production models of the equipment. (See Attachment B)

D. Importation of Radio Equipment

1. A permit to import and a corresponding special permit number for each unit of SRRS shall be granted only to NTC authorized radio dealer upon filing of application and the payment for permit to import and the Special Permit fee per SRRS radio equipment.

A Special Permit fee per SRRS unit shall also be paid and be issued a corresponding special permit number for each SRRS radio equipment to be manufactured locally.
2. All radio dealers and manufacturers shall submit to the Commission a regular sales and stock report for SRRS which shall include the serial number and corresponding special permit number per unit of all imported and/or locally manufactured SRRS radio equipment.

E. Licensing, Collection and Type Approval/Acceptance Fees

1. A one time special permit fee of One Thousand pesos (PHP 1,000) per SRRS unit shall be collected upon application from NTC authorized radio dealers in accordance with Section D-1 above.



2. Any SRRS radio transceiver purchased from any authorized radio dealer shall be issued with a corresponding SRRS special permit number per unit issued by the Commission, which shall serve as the SRRS Special Permit.

3. Type Approval

Filing Fee	PHP	150.00
Laboratory fee		5,000.00
Certificate fee		1,200.00

4. Type Acceptance

Filing fee	PHP	150.00
Certificate fee		1,200.00

F. Administrative Sanction

Any person and/or entity who shall purchase, possess and/or operate an SRRS radio equipment without SRRS special permit or sell SRRS radio units without being an NTC accredited radio dealer and fails to submit the regular registration of their sales and stock report, shall be dealt with in accordance with the existing Radio Laws and Regulations.

G. Effectivity

This Circular shall take effect 15 days after publication and may be revised, revoked or amended, in the interest of public service and as determined by the Commission.

Any circular, order or memorandum, which is inconsistent herewith, is deemed superseded.

Quezon City, Philippines 26 January 1998.

(SGD.) SIMEON L. KINTANAR
Commissioner

(SGD.) FIDELO Q. DURLAO
Deputy Commissioner

(SGD.) CONSUELO S. PEREZ
Deputy Commissioner



Attachment A

**TECHNICAL STANDARDS AND SPECIFICATIONS
OF RADIO TRANSCEIVERS
IN THE
SHORT RANGE RADIO SERVICE (SRRS)
IN THE PHILIPPINES**

1. GENERAL REQUIREMENTS

1.1 Scope of Specification

1.1.1 This specification prescribes the minimum requirements for the type approval of multi-channel portable radio for localized communications (Short Range Radio Service)

1.1.2 For equipment covered by this specification, the maximum transmitter output power allowed shall not exceed 3 watts and the nominal carrier frequency separation between adjacent channels shall be 12.5 kHz.

1.2 Frequency Band – the equipment shall be designed to operate on the frequency band 325.0000 to 325.4875 MHz.

1.2.1 The 40 single-frequency channels listed in Annex A are allotted on a shared use basis. The radio must not be capable of operating on any frequencies other than those provided in this specification.

1.2.2 No radio shall be type approved or type accepted if it is capable of being user or dealer altered to operate on frequencies other than those provided in this specification.

2. MARKINGS

The equipment shall have external and internal markings as specified in Annex B.

3. RADIO TRANSCEIVER SPECIFICATIONS

3.1 Type of Emission : FM only (11K0F3E)

3.2 Transmitter Output Power : 3W maximum



- 3.3 Modulation Limiting : ± 2.5 kHz
- 3.4 Conducted Spurious Emissions (Tx) : Attenuation (dB) = $43 + 10 \log P$
P = rated carrier power in Watts
- 3.5 Frequency Error : ± 3 ppm
- 3.6 Conducted Spurious Emission (Rx) : 20 nW or less
- 3.7 The equipment must be equipped with Continuous Tone Code Sub-audible Squelch (CTCSS – EIA 220 B) capability, with a minimum number of 10 distinct tones from the list provided in Annex A.
 - 3.7.1 Additional CTCSS tones and other coded squelch systems may be installed without restriction.
 - 3.7.2 A manual or automatic means to monitor the channel prior to use or a means to prevent transmission on occupied channels shall be fitted.
- 3.8 The use of digital squelch system is also allowed.
- 3.9 The equipment must be equipped with unique antenna fittings and matching antenna with a maximum gain of unity.
 - 3.9.1 BCN, type N and PL/SO series antenna fittings are not allowed.
 - 3.9.2 The equipment must not be supplied to the end user with antenna fitting adapters.

4. STANDARD TEST CONDITIONS

4.1 Definition

Standard test conditions are those conditions which shall apply to the equipment while it is being tested for the minimum standard in this Specification unless otherwise specified.

4.2 Test Voltage

The test voltage shall be within $\pm 2\%$ of the value stated by the manufacturer and shall be measured at the point of power connection to the equipment.

4.3 Test Atmospheric Conditions



The test atmospheric conditions are the average temperature and humidity of the atmosphere prevailing in the room in which the equipment is tested. It shall be within the following limits:

Temperature : 25°C to 50°C
Relative Humidity : 20% to 75%

4.4 Transmitter Test Modulation

The standard test modulation shall be a 1000 Hz sinusoidal audio input signal having 1% or less total harmonic distortion applied at a level required to produce a 1.5 kHz deviation in accordance with 12.5 kHz channel spacing.

4.5 Transmitter Output Load

The standard transmitter output shall be resistive termination load equal to the nominal load into which the transmitter operates. The nominal impedance of this load shall be 50 ohms unless otherwise stated by the manufacturer.

4.6 Transmitter Loading Conditions

The manufacturer shall specify the transmitter loading conditions.

4.7 Transmitter Input Signal

The transmitter input signal source shall be an audio frequency generator which shall be connected to the microphone's electrical inlet. The source impedance of the generator shall be 600 ohms nominal unless otherwise specified by the manufacturer.

4.8 Warm-up Period

The equipment may have a 15-minute warm-up period under standby conditions prior to all tests, except when otherwise specified.

4.9 Standard Test Frequency

Except where otherwise specified, all tests shall be conducted on the highest and lowest channels within the switching range of the equipment and on a channel near the middle of the switching range.

5. EXTREME TEST CONDITIONS

5.1 Extreme test conditions are the extreme temperatures and the extreme test voltages, which shall be applied to the equipment during some of the tests.



The extreme temperature shall be +10°C and +60°C

The extreme test voltages shall be $\pm 10\%$ of the standard test voltage.

The equipment shall be tested at standard test voltage, at the above mentioned lower and higher limits of temperature range, the measurements shall then be repeated at the extreme limits of the test voltage range, at the same lower and higher limits of temperature range.

The relative humidity shall not exceed 15% at +10°C and +60° to avoid excessive condensation.

5.2 Method of Measurement

Before starting the tests at the extreme test conditions, the equipment shall be evaluated for the performance characteristic under standard test conditions.

While at the ambient temperature, the equipment shall be placed into the test chamber in the switched off condition.

The chamber shall then be set to the specified temperature limit.

The equipment shall be exposed to the specified temperature limit for an hour after which its temperature would reach thermal equilibrium within the chamber.

The equipment shall then be switched on and operated at standard test voltage to check whether it is capable of functioning.

5.2.1 For Measurements at Lower Temperature Limit

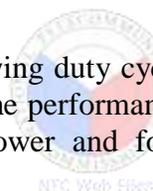
The equipment shall be switched off and exposed to the lower temperature condition for a further period of two hours without forced circulation of air directly on the equipment.

At the end of this period, the equipment is switched on for one minute and evaluated for the performance characteristic at the lower and higher voltage respectively.

After all measurements are made, the chamber shall be set at room temperature and the equipment shall be removed from the chamber only after equilibrium has reached and sufficient time allowed for the recovery period.

5.2.2 For Measurements at Higher Temperature Limit

For transmitter test, the equipment shall remain in operation under following duty cycle condition for at least half an hour before the equipment is evaluated for the performance characteristic: one minute transmit at rated radio frequency output power and four minutes standby.



For receiver tests, the equipment shall remain in standby condition for at least half an hour before the equipment is evaluated for the performance characteristic.

The measurements shall be made at the lower and higher limits of the test voltage range. After all measurements are made, the equipment shall be subjected to the same recovery period as in Section 4.2.1

6. TRANSMITTER TESTS

6.1 Carrier Power

The carrier power is the average power available at the output terminals of the equipment in the absence of modulation when the output terminals are connected to the nominal load condition specified by the manufacturer.

6.1.1 Method of Measurement

The carrier power output shall be measured under the standard test conditions without modulation for a period of 30 minutes using 1 minute “transmit” and 4 minutes “standby”.

The carrier power output measurement shall be repeated under the extreme test conditions as in Section 5.

6.1.2 Limits

The carrier power output shall be within +1 dB and -1.5dB of the rated value stated by the manufacturer under standard test conditions. It shall be within ± 2 dB of the rated value stated by the manufacturer under extreme test conditions.

6.2 Modulation Limiting

Modulation limiting refers to the ability of the equipment to prevent its modulation from exceeding the maximum permissible deviation for the corresponding separation of adjacent channels.

6.2.1 Method of Measurement

The deviation shall be measured at the output of the transmitter in a proper loading condition by means of a deviation meter. With a modulation frequency of 300 Hz the audio input level shall be increased by 20dB (in steps of 10dB) above that level required at 1000Hz to produce 60% of the maximum permissible deviation. The instantaneous peak and the steady state deviations shall be observed.

The modulation frequency shall then be varied from 300 Hz to 3000 Hz.



6.2.2 Limits

The transmitter maximum instantaneous peak and steady state deviation shall not exceed ± 2.5 kHz.

6.3 Conducted Spurious Emissions

Conducted spurious are any discrete radio frequency emissions which are transmitted by the transmitter at the antenna terminals other than its specified carrier frequency and modulation products within its authorized bandwidth.

Note: Spurious emissions include harmonic, non-harmonic and parasitic emissions and intermodulation products.

6.3.1 Method of Measurements

Conducted spurious emissions shall be measured while the unmodulated transmitter is connected to its load as specified in Section 4.5 and 4.6. Measurements of individual spurious emission shall be made using a tuned RF measuring instruments or a spectrum analyzer.

The measurement shall be made over the frequency range from 100 kHz to 1500 Mhz.

6.3.2 Limits

The power of any conducted spurious emissions shall be attenuated below the maximum level of carrier frequency in accordance with the following formula:

Attenuation (dB) = $43 + 10 \log P$ where P = carrier power output in Watts

6.4 Frequency Error

Frequency error is the difference between the unmodulated carrier frequency and the assigned frequency. The frequency error is expressed in parts per million.

6.4.1 Method of Measurement

The frequency error is determined by measuring the carrier frequency in the absence of modulation under standard test conditions.

The carrier frequency shall be measured with a frequency counter with an accuracy that is at least ten times more precise than the minimum standard specified below.

6.4.2 Limits

The frequency error shall not exceed ± 3 ppm under standard and extreme test conditions.



7. RECEIVER TESTS

7.1 Conducted Spurious Emissions

Conducted spurious emissions are emissions at any frequencies emitted at the antenna terminals of the equipment in the receiver mode.

7.1.1 Method of Measurement

Conducted spurious emissions shall be measured across a resistive load at the equipment antenna terminals.

Measurements of individual spurious emissions shall be made using a frequency selective voltmeters or a spectrum analyzer.

The measurement shall be made over the frequency range from 100 kHz to 1500 Mhz.

7.1.2 Limits

The power measured at any spurious frequency shall not exceed 20 nanowatts.



Channel Frequencies (Mhz)

The channel frequencies are:

1	325.0000	12	325.1375	23	325.2750	34	325.4125
2	325.0125	13	325.1500	24	325.2875	35	325.4250
3	325.0250	14	325.1625	25	325.3000	36	325.4375
4	325.0375	15	325.1750	26	325.3125	37	325.4500
5	325.0500	16	325.1875	27	325.3250	38	325.4625
6	325.0625	17	325.2000	28	325.3375	39	325.4750
7	325.0750	18	325.2125	29	325.3500	40	325.4875
8	325.0875	19	325.2250	30	325.3625		
9	325.1000	20	325.2375	31	325.3750		
10	325.1125	21	325.2500	32	325.3875		
11	325.1250	22	325.2625	33	325.4000		

CTCSS Code Frequencies (Hz)

The standard frequencies are:

67.0	71.9	74.4	77.0
79.7	82.5	85.4	88.5
91.5	94.8	100.0	103.5
107.2	110.9	114.8	118.8
123.0	127.3	131.8	136.5
141.3	146.2	151.4	156.7
162.2	167.9	173.8	179.9



186.2	192.8	203.5	210.7
218.1	225.7	233.6	241.8
250.3			

ANNEX B

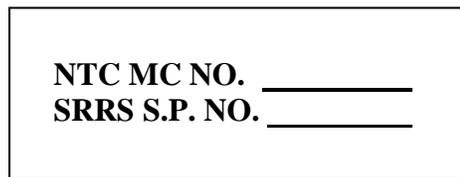
MARKINGS

1. The SRRS radio equipment shall have an external front marking as follows:



Letters shall be printed in blue with a red background.

2. The SRRS radio equipment shall have a tamper proof internal marking (preferably facing the battery) as follows:



MC No. : SRRS Memorandum Circular Number
 SP No. : Special Permit Number to be issued by NTC per radio equipment

