

**EQUIPMENT, ETC. THAT DOES NOT NEED TO BE CONTAINED  
IN A CABINET OF THE RADIO EQUIPMENT  
USED AT CONVENIENCE RADIO STATIONS WHICH USE  
EMISSIONS OF A FREQUENCY IN THE 900 MHZ BAND**

(Article 54 of the Ordinance Regulating Radio Equipment)

November 22, 1982

Ministry of Posts and Telecommunications Notification No. 860

Finally amended in No. 60 on January 27, 1986

The equipment, etc. that does not need to be contained in a cabinet of the radio equipment used at convenience radio stations which use emissions of a frequency in the 900 MHz band, the selection of a frequency of emissions to be used, the procedure for transmission and reception, and the composition of a control signal shall be stipulated as follows based on the provisions of Article 54 item 3 of the Ordinance Regulating Radio Equipment (Radio Regulatory Commission Regulations No. 18 of 1950), and shall come into force as of December 1, 1982.

- 1 The equipment that does not need to be contained in a cabinet of radio equipment shall be as follows.
  - (1) An indicator which indicates the operation state of a transmitting device and a receiving device, and information required to carry out transmission and reception in accordance with the procedure stated in item 2 below
  - (2) An operating device which performs operation required to carry out transmission and reception in accordance with the procedure stated in item 2 below
  - (3) A volume controller
  - (4) A squelch adjusting device
- 2 The selection of frequencies of emissions to be used, and the procedure for transmission and reception shall be as follows.
  - (1) Action for applying power supply  
After power supply is applied, the radio equipment enters a standby action.
  - (2) Standby action
    - a The control signal is initialized.
    - b The control signal is set to the control channel and the control channel waits for any signal.
    - c When a calling signal is requested, the equipment enters the calling action.
    - d When a receiving signal is requested, the equipment enters the receiving action.
    - e Only when the radio equipment complies with all the conditions defined in the items below (hereinafter referred to as “when a calling signal is received”), the equipment, upon receiving the control signal, sets the group code and channel code of the control signal to the received group code and channel code, and enters the capture action.
      - (a) The received frame synchronization signal shall be capable of being detected. However, the

said signal shall be deemed to have been detected only when the signal transmission rate coincides at 14 bits or more out of 15 bits.

- (b) The received group code shall coincide with the group code which has been set in advance.  
In this case, the number of kinds of group codes which can be set in advance shall be 10 or less.
- (c) The received channel code shall indicate integers from 2 to 158.
- (d) The first code of the received command code shall be "0" or "1."

(3) Calling action

- a The channel is set to the speech channel which has been selected at random.
- b When a receiver input voltage which exceeds the value set arbitrarily in a range of 0.178  $\mu\text{V}$  to 1.78  $\mu\text{V}$  (hereinafter referred to as a "threshold value") is applied, the equipment returns to the action of a. above.
- c When the state where the receiver input voltage is lower than a threshold value (hereinafter referred to as a "desensitization state") continues for one minute or longer, the channel code of the said speech channel shall be stored.
- d The group code and channel code of the control signal shall be set to the group code which has been set in advance and the channel code which has been stored in the action of c. above.
- e The channel is set to the control channel.
- f When the equipment is in the desensitization state, it enters the capture action after transmitting a control signal.
- g When quiescence of calling is requested, the equipment returns to the standby action.

(4) Receiving action

- a The channel is set to the speech channel which has been selected at random.
- b If there is a calling signal, the group code and channel code of the control signal are set to the group code and channel code in which the control signal has been received only when calling is requested within five minutes, and the equipment enters the speech action.
- c When clearing is requested, the equipment returns to the standby action.

(5) Capture action

- a The channel is set to the speech channel of the channel code set to a control signal.
- b When transmission is requested, the equipment enters the speech action.
- c When clearing is requested, the equipment returns to the standby action.
- d When disconnection is requested, the equipment enters the standby action after transmitting a control signal.
- e When a control signal due to the request of disconnection is received, the equipment returns to the standby action.
- f When transmission is not requested for ten seconds or longer after the channel is set to the speech channel, and when the state where there is no request for continuous reception continues for that period of time, the equipment returns to the standby action.
- g When there is no request for transmission and continuous reception for 30 seconds after the channel is set to the speech channel, and when a receiver input voltage exceeding the threshold value is applied, the equipment enters the action of e of (6) below.
- h When there is no request for transmission and continuous reception for 30 seconds after the channel is set to the speech channel, and when the desensitization state continues for that period of time, the equipment returns to the standby action within 1.5 seconds.

- i When continuous reception is requested, the equipment enters the action of e of (6) below.
- (6) Speech action
- a An sound signal is transmitted after only a control signal is transmitted.
  - b When emission radiation continues for 60 seconds after a control signal is transmitted, only a control signal is transmitted within three seconds.
  - c When five minutes pass after the speech time restriction is set, emission radiation is stopped after only a control signal is transmitted, and the equipment returns to the standby action.
  - d When the transmission request has disappeared, emission radiation is stopped after only a control signal is transmitted.
  - e When there is no transmission request after emission radiation is stopped or after the equipment enters the speech action in succession to the capture action or the re-calling action, and when the state where the received group code does not match the group code set to a control signal continues for five minutes, the equipment returns to standby action within 15 seconds.
  - f When transmission is requested, the equipment returns to the action of a of (6).
  - g When clearing is requested, the equipment returns to the standby action.
  - h When disconnection is requested, the equipment returns to the standby action after transmitting a control signal.
  - i When a control signal due to the request of disconnection is received, the equipment returns to the standby action.
  - j When the group code set to a control signal indicates any numeral other than 0, and when re-calling is requested, the equipment enters the re-calling action.
  - k When five minutes pass after the speech time restriction is set, the equipment returns to the standby action.
- (7) Re-calling action
- a The channel is set to the control channel.
  - b When the equipment is in the desensitization state, it returns to the action of e of (6) above after transmitting a control signal.
  - c When one second passes after the channel is set to the control channel, the equipment sets the channel to the original speech channel, and returns to the action of e of (6) above.
- (8) The series of flow charts from (1) to (7) is equal to the flowchart shown in Fig. 1.
- 3 The composition of a control signal shall be as follows.
- (1) The control signal shall consist of a bit synchronization signal, a frame synchronization signal and data arranged as shown in Fig. 2.
  - (2) The bit synchronization signal shall consist of codes of 50 bits in which “1” and “0” are arranged one after another.
  - (3) The frame signal shall be “111011001010000.”
  - (4) The data shall be the data in which the code which consists of a group code, channel code, command code, call name, and option code arranged as shown in Fig. 3 is converted to the Hagelberger code based on the following expression.

$$Y_{2i-1} = \begin{cases} \overline{X_i} & i = 1 \sim 3 \\ \overline{X_i \oplus X_{i-3}} & i = 4 \sim 88 \\ \overline{X_{i-3}} & i = 89 \sim 91 \\ 1 & i = 92 \sim 94 \end{cases}$$

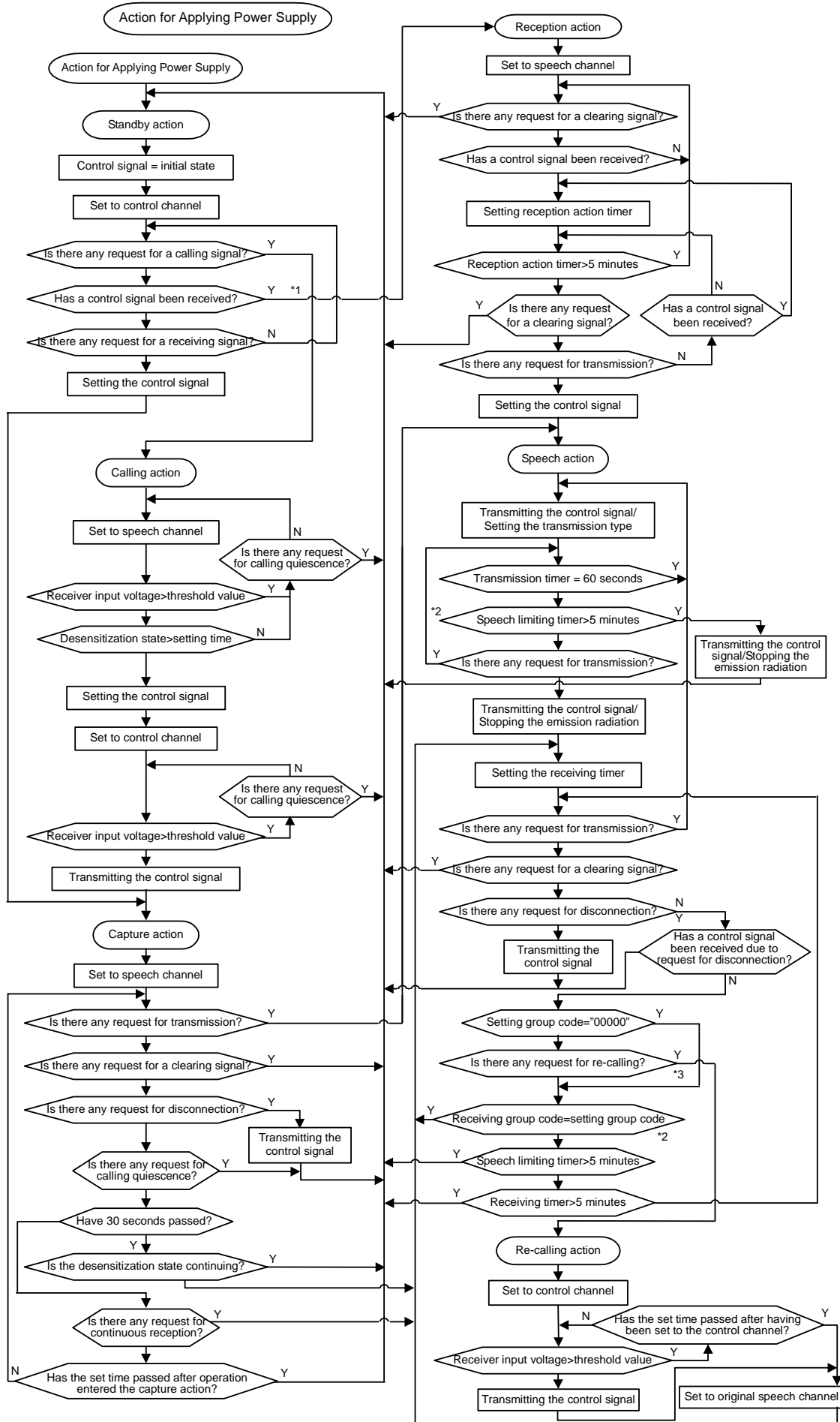
$$Y_{2i} = \begin{cases} 0 & i = 1 \sim 6 \\ X_{i-6} & i = 7 \sim 94 \end{cases}$$

However,  $X_i$  shall represent a code of the order of  $i$ , and  $Y_{2i-1}$  and  $Y_{2i}$  shall represent the Hagelberger code of the order of  $2i-1$  and of the order of  $2i$  respectively.

**Supplementary Provisions** (January 27, 1986  
Ministry of Posts and Telecommunications No. 60)

- 1 This Notification shall come into force as of January 27, 1986.
- 2 Notwithstanding the provisions of the Notification after amendment, the conditions for the radio equipment of convenience radio stations using emissions of a frequency in the 900 MHz band for which technical standards conformity certification is obtained after the enforcement of this Notification can continue to conform to the prior Regulations until July 27, 1986.
- 3 The radio equipment of convenience radio stations using emissions of a frequency in the 900 MHz band for which technical standards conformity certification was obtained before July 27, 1986 as the radio equipment which complies with the technical conditions defined in the Notification before amendment shall have the effectiveness of the said certification even after the said date.

**Fig. 1** Flowchart of the selection of frequencies of emissions to be used and the procedure for transmission and reception



**Fig. 2** Composition of a control signal

Bit synchronization signal	Frame synchronization signal	Data
50 bits	15 bits	172 bits

**Fig. 3** Composition of data

Group code	Channel code	Command code	Call name	Option code
20	8	4	48	8

- Notes:
- 1 Numerals shall indicate the number of bits.
  - 2 Each code shall show higher-order digits of a binary number on the left side.
  - 3 “Group code” shall indicate characters or numerals in five digits represented in 4 bits, as shown below. Numerals shall be those which convert a decimal number to a binary number.

5 <sup>th</sup> digit	4 <sup>th</sup> digit	3 <sup>rd</sup> digit	2 <sup>nd</sup> digit	1 <sup>st</sup> digit
$2^3 2^2 2^1 2^0$	$2^3 2^2 2^1 2^0$	$2^3 2^2 2^1 2^0$	$2^3 2^2 2^1 2^0$	$2^3 2^2 2^1 2^0$

- 4 “Channel code” shall indicate numerals which convert natural number N calculated by the following expression to a binary numeral.

$$N = \frac{\text{Frequency (MHz) of a speech channel } 902.9875}{0.025}$$

However, in the case of  $2 \leq N \leq 158$

$$N = \frac{\text{Frequency (MHz) of a speech channel } 901.025}{0.025}$$

However, this is for the case of  $81 \leq N \leq 158$

- 5 “Command code” shall be a 4-bit control code.
- 6 “Call name” shall be a call name written in a call-name memory unit equipped in accordance with the provisions of Article 9 of the Ordinance Regulating Radio Equipment.
- 7 “Option code” shall be an 8-bit control code.