CANADIAN STANDARDS ASSOCIATION
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CANADIAN ELECTRICAL CODE
PART IV

RADIO

C22.4 NO. 102—1948

TOLERABLE LIMITS AND SPECIAL METHODS OF MEASUREMENT OF RADIO INTERFERENCE FROM TROLLEY BUSES, TRAMWAYS AND ELECTRIC RAILWAYS

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PREFACE

The problem of setting tolerable limits of radio interference from trolley buses, tramways and electric railways, is being dealt with by Sub-panel 4 of Panel 5, Canadian Electrical Code Part IV (Radio).

These recommendations define the tolerable limits of radio interference from trolley buses and tramway vehicles necessary to ensure radio reception conditions in accordance with the standards provided by other sections of Part IV (Radio) of the Canadian Electrical Code, in so far as is economically feasible.

It is recognized that these recommendations represent the voluntary contribution of the transit industry towards the solution of a problem which has arisen through the development of radio services.

The Sub-panel is not prepared at this time to set up any standard methods of dealing with existing vehicles, owing to the continued inconsistency of results from experiments which have been made, but all transit system engineers are urged to study the report, known as "Appendix 'A' to Report of Radio Inductive Interference in Canada (1939)—Interference from Electric Railway Systems", issued by the Radio Division, Department of Transport.

This Code will be revised from time to time as the art develops. Comments or data bearing on this subject will be welcomed and correspondence on this matter should be sent in duplicate to

The General Manager, Canadian Standards Association,
National Research Building,
Ottawa, Ontario.

and will be recorded and brought to the attention of the committee in charge of drafting this code.

This Code was formally approved, by letter ballot, by Panel 5, CE Code Part IV in November, 1940; by the Committee on CE Code Part IV in December, 1940, and by the CSA Main Committee, with authority to publish it as a CSA Standard, in September, 1945.

Ottawa, December, 1948.

Note: *Publication of this Code was held up pending recent developments towards international unification of procedures and practices relative to the subject and it is now considered practical for the CSA to publish the Code for the purpose of obtaining field experience in the application of its details.*

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SECTION 1

SCOPE

Rule 101

GENERAL

General

(a) This Code applies to radio interference from trolley bus, tramway and electric railway systems.

(b) It is recognized that a large part of the individual items of electrical equipment presently in use on these systems cannot be economically modified to provide for adequate suppression of radio interference and consequently the requirements of this Code apply only to new items of equipment when they are obtained.

(c) The tolerable limit specified is based on the operation of the system as a whole.

NOTE: *For the purpose of this Code interference arising between the collector or collectors and the contact wires and also propagation of existing interference from existing lines are excluded.*

Rule 102

RADIO FREQUENCY

Radio Frequency

(a) The tolerable limit herein specified applies to any frequency within the standard broadcast band—i.e., between 540 and 1,600 kilocycles per second.

Rule 103

OPERATING CONDITIONS

Operating Conditions

(a) These requirements are intended to apply to the operation of the system under normal conditions.

NOTE: *During abnormal operating conditions due to sleet storms, accidental damage, repair or extension work, it is recommended that individual consideration be given to the reduction of the interference as far as is technically and economically feasible.*

Rule 104

MEASUREMENT

Measurement

(a) The method of measurement is outlined in Section 3 herein.

Rule 105

DEFINITIONS

Definitions

(a) The following definition refers to terms printed in boldfaced type in the body of the Code and is extracted from Specification C22.4 No. 100.

The **interference field intensity** is the electric field intensity produced by the interference as measured on the standard interference measuring instrument having an antenna of known effective height located at a point prescribed in the section of the Electrical Code Part IV for the particular type of apparatus, line or system concerned.

Unit—Microvolts per metre.

SECTION 2
GENERAL REQUIREMENTS

Rule 201

GENERAL

General

(a) For general information regarding requirements of the Canadian Electrical Code Part IV, see C22.4 No. 100—"General Requirements, Definitions and Procedure Relative to the Control of Radio Interference".

Rule 202

MEASUREMENT

Measurement

(a) For details of measuring equipment and technique, see C22.4 No. 101—"Interference Measuring Instruments and Methods of Measurement".

Rule 203

SUPPRESSOR COMPONENTS

Suppressor Components

(a) For information regarding suppressor components for trolley buses, tramways and electric railways, see C22.4 No. 108—"Suppressors for Radio Interference"—Section 5 "Construction, Classes and Tests of Radio-Interference Suppression Components for Trolley Buses and Street Cars."

SECTION 3
METHOD OF MEASUREMENT

Rule 301

LOCATION OF MEASURING INSTRUMENT

Location of Measuring Instrument

(a) An approved interference measuring instrument shall be located six feet horizontally on the ground from the ground projection of the trolley-wire where there are no circuits from trolley to ground within 30 feet, and where there are no ground wires or other conductors below the level of the trolley-wire and within six feet of the measuring instrument.

Rule 302

METHOD

Method

(a) For details of measuring equipment and technique see C22.4 No. 101—"Interference Measuring Instruments and Methods of Measurement."

SECTION 4
TOLERABLE LIMIT

Rule 401

INTERFERENCE FIELD INTENSITY

Interference Field Intensity

(a) The **interference field intensity** of a trolley bus, tramway or electric railway system shall not exceed 100 microvolts per metre (40 db above one microvolt per metre), when measured in accordance with Section 3.