Performance specifications for portable radio-telephone set for Dominion Forest Service

National Research Council of Canada. Radio and Electrical Engineering Division

Report (National Research Council of Canada. Radio and Electrical Engineering Division : ERB); no. ERB-207, 1948-07

REPORT NO. ERB - 207

UNCLASSIFIED

LABORATORIES

OF

THE NATIONAL RESEARCH COUNCIL OF CANADA

RADIO AND ELECTRICAL ENGINEERING DIVISION

PERFORMANCE SPECIFICATIONS

FOR

PORTABLE RADIO-TELEPHONE SET FOR DOMINION FOREST SERVICE

OTTAWA

JULY, 1948

PERFORMANCE SPECIFICATION

for

Portable Radio-Telephone Set for Dominion Forest Service

I
GENERAL REQUIREMENTS

A low power, highly portable radio-telephone set for the Forest Service of Canada, which can be used by forestry protection personnel who are travelling on foot carrying fire fighting equipment through hilly, wooded terrain, and who have to contact nearby fire towers or ranger stations. The distances between stations normally will not be large, and a set with a range of ten miles over the type of terrain indicated would be satisfactory. Personnel using the equipment will not necessarily be trained radio operators, and the set should be simple and reliable in operation.

II
GENERAL DESCRIPTION

The transmitter and receiver should be contained in one unit with a detachable hand-set incorporating the microphone, earphone and TRANSMIT-RECEIVE switch. The panel controls should be covered with a hinged lid which will disconnect the power supply when closed. A haversack-type container with web straps should be provided for carrying the unit.

The battery pack should be carried in a haversack similar to that for the transmitter-receiver unit, and should provide sufficient room for the antenna kit and matching unit.

These haversacks should be designed so that they can be carried conveniently by the operator, one on each side of his person.

III
DETAILS

(a) Transmitter

Circuit:	single channel, crystal oscillator, modulated amplifier.
Frequency Range:	1.5 to 5.0 megacycles per second.
Frequency Stability:	±.01%.

DETAILS (cont'd)

Power Output: 1 watt.

Output System: (a) to match whip antenna mounted directly on transmitter-receiver case.

(b) external plug-in unit containing matching network and indicator for feeding end-fed antenna.

Modulation: 100% voice modulation.

Frequency Response: ±3 decibels, 200-1500 c.p.s.

Microphone: carbon microphone contained in detachable hand-set.

(b) Receiver

Circuit: superheterodyne, with a.v.c., consisting of radio-frequency amplifier, mixer, one intermediate-frequency stage, detector and audio amplifier.

Frequency Range: 1.5 to 5 megacycles per second, in two bands.

Tuning: continuously variable with dial directly calibrated in frequency.

Sensitivity: 3 microvolts.

Selectivity: 5 kilocycles at half voltage.

Frequency Response: ±3 db, 200-1500 c.p.s.

Output: 10 milliwatts to single headphone contained in hand-set.

(c) Antennae

(1) Telescopic whip, plugging into transmitter-receiver case.
(2) External end-fed antenna, complete with insulators and cords.

DETAILS (cont'd)

(d) Controls

ON/OFF switch
TRANSMIT/RECEIVE switch (Pressel Switch on hand-set)
RECEIVER TUNING control
RECEIVER BAND switch
RECEIVER AUDIO GAIN control

(e) Power Pack

Batteries capable of supplying a total of 24 hours intermittent service with a 3:1 receive:transmit ratio.

(f) Dimensions

(1) The approximate dimensions of the transmitter-receiver unit should be not more than 4" x 7" x 9"; and those of the battery pack (which contains also the antenna and matching kit) should be about the same.

(2) The weight of the transmitter-receiver package and the battery-antenna kit package should each be not more than five pounds.

The requirement here is for the smallest and lightest equipment attainable, consistent with satisfactory and reliable operation.