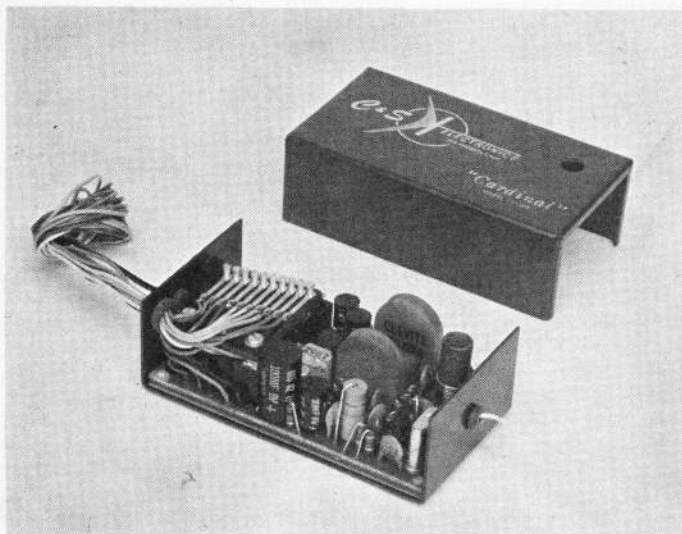


RCM TEST REPORT

Eagle Transmitter Cardinal Receiver

New multi-reed receiver and transmitter from C & S.



A considerable amount of interest followed the announcement by C & S Electronics of the addition of the Eagle CS-510 transistorized multi-transmitter to their line of radio control equipment. For our test report we obtained one of the first production models of the new transmitter, matched on 27.145 mc to the CS-508 Cardinal receiver. The latter was equipped with Medco reed bank. Servos used were five of the new Ancco 2RL relayless units. Battery pack was a Space Control NiCad pack #5500A. A Justin Micro-Tie servo connector board was used to simplify the installation and eliminate the usual flexing soldered leads and numerous connector plugs.

Transmitter circuitry in the "Eagle" is basically a crystal-controlled transistor oscillator feeding a one-watt silicon epitaxial mesa power output transistor stage. Connection to the antenna circuit is made through a "pi" filter network to eliminate harmonics and provide correct antenna matching. Components have been carefully selected, and together with the MOPA circuit, provide minimum drift with maximum output and frequency stability. It was found that placing a hand on the antenna reduced the transmitter output by absorption without affecting frequency.

Two separate Hartley audio oscillators are employed for dual simultaneous operation. In checking the simultaneous feature, a few simple reed adjustments and minor tuning of the audio pots was all that was necessary to obtain a "solid" simul. Frequency stability under all conditions of temperature, humidity, and battery voltage is assured by the use of toroid transformers and Mylar capacitors. A slight interaction in the reed bank was noticed, but was easily tuned out due to sine wave audio tones which reduce the possibility of interaction.

Although completely transistorized, and operating from a single 9V battery (Eveready 276), we found that the "Eagle" transmitter has a power output that equals or exceeds that of most tube transmitters currently available. The efficient circuit and antenna de-

sign takes full advantage of the power available from the 9-volt supply. Use of collector modulation further increases the output when the audio is keyed. Output is continually monitored by an "output" meter on the front of the transmitter. Relative battery condition can be determined by these meter readings. Although designed for a single 9V battery, the "Eagle" will operate efficiently from a NiCad pack of seven 1.25 volt, 500mah cells, providing approximately 8.75 volts.

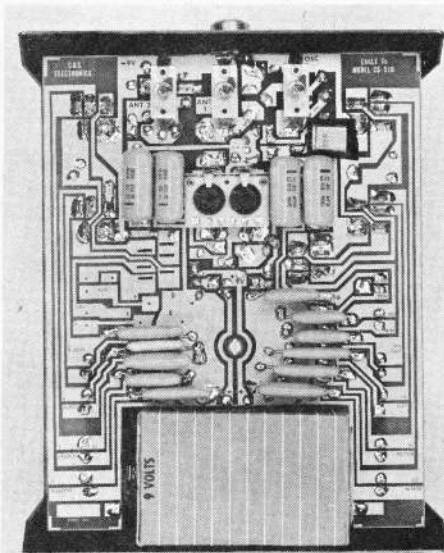
The "Eagle" is available in 6, 10, or 12 channels, with the 6 and 10 channel models convertible upwards when extra channels are desired. Packaging is attractive, with the standard C & S green case, yellow printing, and yellow toggle switches. For visual convenience, a brown toggle switch is used for the trim lever.

Specifications:

Operating Voltage	9 volts
Power Amplifier Input	
Current	40-45 milliamperes
Power	450 milliwatts
Transmitter Current	
Drain (total)	70-75 milliamperes
Power Output	
(nominal)	250 milliwatts
Audio Modulation	
Range	325-650 CPS
Modulation Percentage	80-85%
Tuning Range	26.995 to 27.255
Frequency Tolerance Decimal005%
Operating Temperature	
Range	0 to +130F
Dimensions	2 7/8" x 6" x 7 1/2"
Antenna length	15 1/4" to 55"
Price:	
6 Channel	\$ 89.50
10 Channel	\$109.50
12 Channel	\$129.50

Cardinal Receiver:

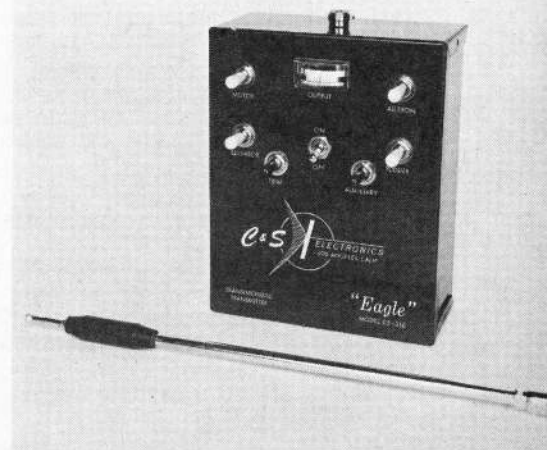
The CS-508 "Cardinal" superheterodyne receiver is one of the most selective and sensitive RC units we have tested. The narrow bandwidth will reject undesired signals 5Kc or more away from operating frequency, while sensitivity is high enough to permit receiver operation on signals as low as two microvolts. The "Cardinal" has a highly efficient reverse AGC to pre-



vent close range overloading. Solid state circuitry is employed throughout, including six transistors in the IF stages. The receiver cannot drift or vibrate out of alignment due to the fact that the usual adjustable transformers are replaced by the newer Cle vite Transfilters. The only tuning required was to peak the antenna circuit for maximum sensitivity with the "Eagle" transmitter.

Specifications:

Sensitivity	2 microvolts
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(Continued from page 31)

Bandwidth4 Kc at 6 db

Operating voltage:

4.8 minimum

6.0 nominal

6.5 maximum

Idle Current (at 70F)....9 ma nominal

Idle Current

(at 70F)....9 ma nominal (carrier off)

13 ma nominal (carrier on)

Modulation Percentage

Req'd.80-100%

Recommended

TransmitterCS-510 "Eagle"

Available FrequenciesAll

Operating Temperature

Range0 to +140F

Dimensions1" x 1 $\frac{3}{4}$ " x 3"

Weight3 $\frac{1}{2}$ ounces

Price:

10 Channel\$74.50

12 Channel\$84.50

Our test conclusions indicate that both the C & S "Eagle" transmitter and "Cardinal" receiver, equal, and in most cases exceed, manufacturers specifications. Both units evidence careful design consideration, are well made, and operate under a wide range of conditions at maximum efficiency and reliability. RCM rates these units as excellent and recommended.
