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DSM Performance Recognition Awards Announced

Philip G. Schweinfurth, Michigan, Named Grand National Winner

Philip G. Schweinfurth, Taylor, Michigan, has won the Grand National Award of the 1972-73 RCA Distributor Service Managers' Technical Training Performance Recognition Program.

Mr. Schweinfurth, Distributor Service Manager (DSM) of RCA Distributing Corp., Taylor, Michigan,

received the award in special ceremonies in Las Vegas, May 22, during the 1973 RCA Sales Planning Program Meeting. The award was presented to him by William C. Hittenger, Executive Vice President, RCA Consumer & Solid-State Electronics, and David E. Daly, Division Vice President, Marketing Programs, RCA Consumer Electronics.

The Grand National Award is given annually to the RCA Distributor Service Manager who achieves the

(continued on page 2)



Award winners in the 1972-73 RCA Distributor Service Managers' Technical Training Performance Recognition Program. From left to right: D. J. Iredale (Principal) and Philip G. Schweinfurth (DSM), RCA Distributing Corp., Taylor, Michigan; D. M. Kuykendall (Principal) and Roger L. Karr (DSM), Ward Terry & Co., Denver, Colorado; William J. Blamire (Principal) and Donald W. Fuerst (DSM), RCA Distributing Corp., Buffalo, N.Y.; John H. Austin (DSM) and L. T. Richardson, Nunn Electric Supply Corp., Lubbock, Texas. Mr. Richardson accepted the Distributor Principal award on behalf of C. D. Helm (Principal), Nunn Electric Supply Corp., who was unable to attend the award ceremonies on May 22 in Las Vegas.

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Philip G. Schweinfurth (center), DSM, RCA Distributing Corp., Taylor, Michigan, receives the Grand National Award during ceremonies in Las Vegas. Presenting the award to him are (right) William C. Hittenger, Executive Vice President, RCA Consumer & Solid-State Electronics, and (left) David E. Daly, Division Vice President, Marketing Programs, RCA Consumer Electronics.

highest percentages of attendance at field technical training programs conducted by him during the year. Program attendance goals are assigned each Distributor Service Manager based on the number of servicing agents in his area.

In addition to the special plaque presented to him during the recognition ceremonies, Mr. Schweinfurth received a six-day, expenses-paid trip for two to Mexico City and Acapulco.

The three Regional winners in the program also were honored during the award ceremonies in Las Vegas. They are: Donald W. Fuerst, DSM, RCA Distributing Corp., Buffalo, N. Y., Eastern Regional winner; John H. Austin, DSM, Nunn Electric Supply Corp., Lubbock, Texas, Southern Regional winner; and Roger L. Karr, DSM, Ward Terry & Co., Denver, Western Regional winner. Each received a bronze plaque and a three-day, expenses-paid trip.

Six other Distributor Service Managers have received special recognition for achieving or surpassing all of the program attendance goals assigned them during the 1972-73 Training Program. The six are: Barney Bretemps, Eastco, Inc., East Hartford, Conn.; Guy K. Loewen, Kings Appliance & Electric, Savannah, Georgia; Leo M. Poisson, Morley Brothers, Saginaw, Michigan; William A. Hamilton, Ohio Appliances, Inc., Cincinnati, Ohio; Dennis L. O'Neill, RCA Distributing Corp., San Antonio, Texas; and R. Glenn Roberts, Keith Simmons Co., Inc., Nashville, Tenn.

Field Technical Training programs conducted by RCA Distributor Service Managers are developed and produced by the Technical Services-Training Section of RCA Consumer Electronics. □

Troubleshooting The CTC 51/52 Volume/On/Off System

The theory of operation of the volume/on/off section of the two-frequency remote control system used in CTC 51 and CTC 52 color TV chassis was explained in the March-April issue of *Plain Talk*. (The same remote control system is also used now in color TV chassis CTC 53 and CTC 71. In addition, a version of this two-frequency remote system is used in the recently introduced CTC 68 color TV chassis. This version is identical to that used in the CTC 51, CTC 52, CTC 53 and CTC 71 chassis except that a four-transistor on/off circuit has been added to eliminate the need for depressing the local on/off button up to three times to turn off the receiver. The theory of operation of this additional on/off circuit will be explained in a later issue of *Plain Talk*.)

A systematic approach to localizing and isolating defects in the volume/on/off section of the two-frequency remote system is presented in the following paragraphs.

Determining Whether The Defect Is In The Volume/On/Off Section Or External To It

Trouble symptoms associated with the volume/on/off system can be divided for analysis into the following two general categories. These two categories can be used as a basis for localizing the cause of the trouble to either the volume/on/off section or to the related circuitry external to it.

● *If one or more of the functions of the volume/on/off circuitry can be activated remotely*, the remote transmitter and remote receiving circuitry up to and including the ring-up circuit is functioning properly and the trouble is in the volume/on/off circuitry itself.

● *If none of the functions of the volume/on/off circuitry can be activated remotely*, it is possible that the cause of the trouble exists in the remote transmitter or in the remote receiving circuitry up to and including the ring-up circuit. To determine whether the cause of the trouble is in the volume/on/off circuitry or in the ring-up circuit or circuitry preceding it, try activating the volume/on/off circuitry with switch S4201, on the front panel of the receiver. If the volume/on/off circuitry *can* be activated normally by momentarily depressing switch S4201, the trouble is in the ring-up circuit or in the remote receiving or transmitting circuitry preceding it. If the volume/on/off circuitry *cannot* be activated by momentarily depressing switch S4201, the defect is in the volume/on/off circuitry itself.

Isolating The Defect

After you have determined that the trouble symp-

tom is caused by a defect in the volume/on/off circuitry, use the following techniques to isolate it:

Receiver fails to turn on

1) If the receiver does not come on when switch S4201 is momentarily closed, briefly ground the collector of on/off transistor Q1111. If the receiver comes on and stays on during the brief period you have grounded the collector of Q1111, relay K 1101 and triac Q104 are functioning normally and the defect is elsewhere in the volume/on/off circuitry. Proceed to step 3.

2) If the receiver does not come on and stay on during the brief period you have grounded the collector of Q1111, apply a short between pins 3 and 4 of K1101. If the receiver now comes on, relay K1101 is defective or diode CR 1114 is shorted. If the receiver does not now come on, triac Q104 or its gate circuitry is defective or a defect exists in the power-input circuitry or low-voltage power supply. To determine whether or not Q104 is defective, short across it from the COMMON to the HIGH elements. If the receiver now comes on, Q104 is defective.

3) Momentarily ground the collector of Schmitt trigger transistor Q1106. If the receiver now comes on in the high-volume mode and can be stepped through the other two volume modes and to the OFF mode, the defect is in the circuitry between the collector of ring-up transistor Q1104 and the collector of Q1106.

4) If the receiver does not come on when the collector of Q1106 is grounded, momentarily ground the collector of Q1107. If the receiver now comes on, the defect is in the trigger-input circuitry

of flip-flop A. The most probable defects are an open C114 or open CR 1107.

5) If the receiver does not come on when the collector of Q1107 is grounded, momentarily ground the collector of Q1109. If the receiver now comes on in the medium-volume mode, the defect is in flip-flop A or diode CR 1112 is open. The most probable defect in flip-flop A which would cause this symptom is a shorted CR 1107.

6) If the receiver does not come on when the collector of Q1109 is grounded, transistor Q1111 is defective.

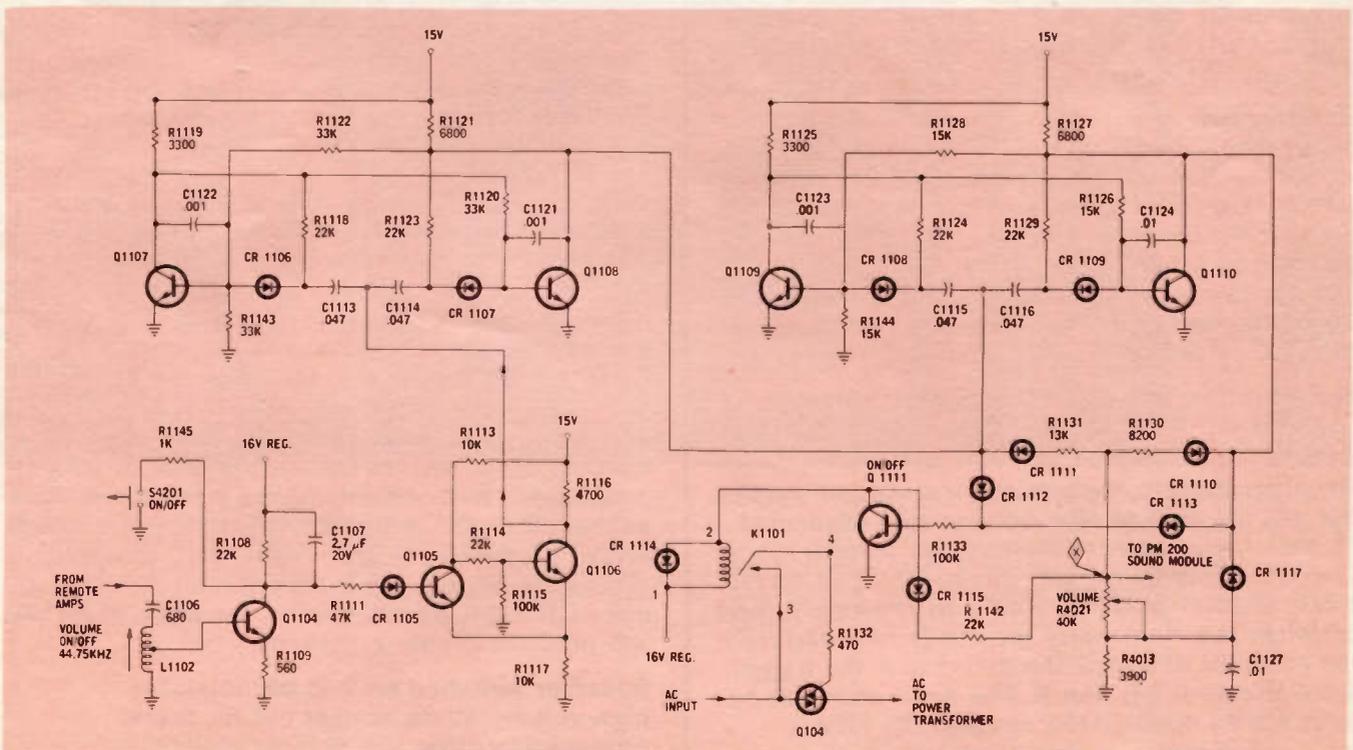
Receiver comes on in high-volume mode but turns off when stepped to medium-volume mode.

1) Momentarily ground the collector of Q1109. If the receiver now steps to the medium-volume mode, the defect is in the trigger input circuitry of flip-flop B or Q1109 is defective and cannot conduct. The most probable defects, other than Q1109, are an open C1116 or an open diode CR 1109.

2) If the receiver does not step to the medium-volume mode when the collector of Q1109 is grounded, either diode CR 1112 is shorted, diode CR 1113 is open or a defect within flip-flop B is preventing the cutoff of Q1110. The most probable defect within flip-flop B which would cause this symptom is a shorted CR 1109.

Receiver is on but cannot be stepped out of a volume mode

1) If the receiver can be stepped out of the "stuck" volume mode to the other two volume modes and to the OFF mode by alternately grounding the



Schematic diagram of CTC 51/52 volume/on/off system

collectors of Q1108 and Q1107, the defect is in either the trigger-input circuit of flip-flop A, the Schmitt trigger or the circuitry which switches the Schmitt trigger. To determine in which of these circuits the defect exists, proceed to Step 2.

If the receiver is stuck in the high-volume mode and is stepped directly to the low-volume mode when the collector of Q1108 is momentarily grounded, either an internal defect in Q1108 or a defect elsewhere in flip-flop A is preventing conduction of Q1108. The same is true if the receiver is stuck in the low-volume mode and is stepped to the high-volume mode when the collector of Q1108 is momentarily grounded. The most probable defect is a shorted CR 1106.

If the receiver is stuck in the medium-volume mode and cannot be switched to the low-volume mode by grounding the collector of Q1107 but switches between the medium-volume and off modes when the collectors of Q1109 and Q1110 are alternately grounded, a defect within flip-flop A is keeping Q1108 from cutting off. The most probable defect is a shorted CR 1107.

If the receiver is stuck in the medium-volume mode and can be switched to the low-volume mode by grounding the collector of Q1107 but switches to the off mode when the momentary ground is removed, an internal defect in Q1107 or a defect elsewhere in flip-flop A is preventing conduction of Q1107.

2) *Momentarily ground the collector of Q1106. If the receiver now steps to the next operating mode or to the off mode, a defect within the Schmitt trigger is preventing conduction of Q1106 or a defect in the base circuit of Q1105 is preventing cutoff of Q1105. The most probable defects are a defective Q1106 or a shorted or leaky C1107.*

If the receiver is not stepped to the next operating mode when Q1106 is grounded, either a defect within the Schmitt trigger is preventing cutoff of Q1106 or a defect in the trigger-input circuit of flip-flop A is preventing cutoff of Q1107. Measuring the voltage on the collector of Q1106 will verify whether or not Q1106 is conducting continuously. If it is, the most probable causes are an open diode CR 1105 or defective Q1105.

The most probable defects within the trigger-input circuit of flip-flop A which would prevent cutoff of Q1107 are an open C1113 or an open CR 1106.

Receiver steps to medium and low-volume modes but will not step to high-volume and off modes

1) *Step the receiver to the medium-volume mode, then momentarily ground the collector of Q1110. If the receiver now turns off and remains turned off when the momentary ground is removed from the collector of Q1110, the defect is in the trigger-input circuit of flip-flop B. The most probable defects are an open C1115 or open CR 1108.*

2) *If the receiver reverts to the medium-volume mode when the momentary ground is removed*

from the collector of Q1110, either a defect in flip-flop B or an internal defect in the transistor itself is preventing conduction of Q1110. The most probable causes are a defective Q1110 or a shorted CR 1106.

Volume increases to excessive level during receiver turnoff

Most probable cause is an open diode CR 1115.

Volume level excessive in all three volume modes

Most probable cause is a shorted diode CR 1115.

Receiver can be switched on and off normally; sound is produced in all three volume modes, but volume level is abnormal in one or two modes.

The fact that the receiver turns on and off normally and steps to *all* three volume levels, even though the level in one or two modes is abnormal, eliminates the ring-up circuitry, the Schmitt trigger, both flip-flops and the on/off transistor Q1111 and associated circuitry as possible sources of the trouble. This leaves only diodes CR 1111 and CR 1110 and resistors R1131 and R1130 as prime suspects. Defects in these components affect the volume level in the following manner:

● *Only medium-volume level normal*—If the level of volume produced in the medium-volume mode is normal but sound can be heard in the high- and low-volume modes *only* when the volume control is rotated beyond the mid-volume position, the most probable defect is a shorted CR 1111.

● *High-volume level slightly increased; other two drastically reduced*—If the level of volume produced in the high-volume mode is slightly above normal but sound can be heard in the medium- and low-volume modes *only* when the volume control is rotated near or to the maximum-volume position, the most probable defect is a shorted CR 1110.

● *Volume level in high-volume mode below normal; other two normal*—If the level of volume produced in the high-volume mode is the same as that produced in the low-volume mode and the levels produced in the medium and low-volume modes are normal, the most probable defect is an open CR 1110. An increase in the value of R1130 will produce similar symptoms.

● *Volume level in medium-volume mode below normal; other two normal*—If the level of volume produced in the medium-volume mode is the same as that produced in the low-volume mode and the levels produced in the high- and low-volume modes are normal, the most probable defect is an open CR 1111. An increase in the value of R1131 will produce similar symptoms.

Receiver switched on and off normally; high-volume mode normal but no sound produced in other two volume modes

Most probable cause is a shorted diode CR 1117.