TMX - 8210
mod.

GE Mobile Communications

TMX™-8712
TRUNKED MOBILE RADIO
800 MHz, 12 WATT MOBILE
COMBINATION
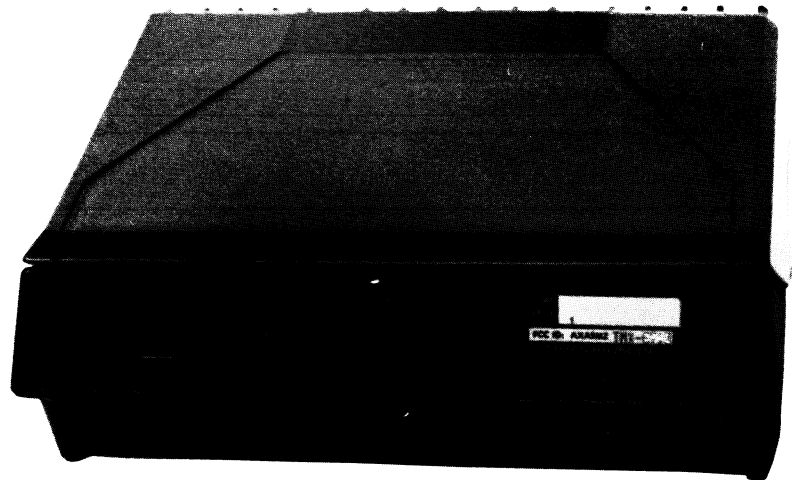
ACN-435

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Maintenance Manual

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SPECIFICATIONS

SYSTEM

Voltage   13.8 Vdc ±20%

Battery Drain:
  Receiver (13.8 Vdc)
  RX Standby   0.5 Amperes (maximum)
  Unsquelched   0.75 (Amperes (maximum at 1 Watt audio)
  Transmitter (13.6 Vdc)   4.5 Amperes (Typical)

                                                  6.0 Amperes (maximum)

Frequency Stability   ±2.5 ppm (+0.00025%)

Channel Spacing   2.5 kHz

Temperature Range   -30oC (-22oF) to +60oC (+140oF)

Duty Cycle   EIA continuous duty

Dimensions
  (Less Accessories)
      Height   71mm (2.8 inches)
      Width   160mm (6.3 inches)
      Depth   200mm (7.9 inches)

Weight
  (Less Accessories)   2.5kg (5.5 pounds)

Military Specifications

	METHODS/PROCEDURES	
STANDARD	**MIL-STD-810C**	**MIL-STD-810D**
Low Pressure	500.1/Procedure 1	500.2/Procedure 1
High Temperature	501.1/Procedure 1,2	501.2/Procedure 1,2
Low Temperature	502.1/Procedure 1	502.2 Procedure 1,2
Temperature Shock	503.1/Procedure 1	503.2/Procedure 1
Solar Radiation	505.1/Procedure 1	505.2/Procedure1
Humidity	507.1/Procedure 2	507.2/Procedure 2
Vibration	514.2/Procedure 8,10	514.3/Procedure 1
Shock	516.2/Procedure 1,2,3,5	516.3/Procedure 1,3,4,5,6

TRANSMITTER		RECEIVER	
Frequency Range	806.0125-824.9875 MHz	Frequency Range	851.0125-869.9875 MHz
Frequency Separation	19 MHz (maximum)	Frequency Separation	19 MHz (maximum)
Power Output	12 Watts	Audio Ampl Output (8-ohm speaker)	1 Watt (less than 5% distortion) EIA
Conducted Spurious	Meets FCC		
Modulation	±5 kHz (maximum)	Sensitivity 12 dB SINAD (EIA method)	-115 dBm (0.4 microvolts) Duplex
Audio Sensitivity	40 millivolts (typical)		
Audio Frequency Characteristics (Per RS-152B)	Within +1 dB to -3 dB if 6dB/ octave pre-emphasis from 300 Hz to 3000 Hz per EIA standards. Post limiter filter per FCC and EIA.	Selectivity (EIA two-signal method)	-70 dB (typical)
Hum and Noise	-45 dB (Companion Receiver)	Spurious Response	-70 dB (maximum)
		Intermodulation	-70 dB typical (12 dB SINAD)
Distortion	less than 3% @ 1000 Hz	Hum and Noise	-45 dB
Deviation Symmetry	0.1 kHz (typical)	Modulation Acceptance	+7 kHz
RF Output Impedance	50 ohms	RF Input Impedance	50 ohms

* Refer to the appropriate Specification Sheet for the complete specifications

COMBINATION NOMENCLATURE

Digits 1 & 2	Digit 3	Digit 4	Digit 5	Digits 6 & 7
Product Code	Radio Type	Frequency	Package	Power Output
TM	**X** Wideband	**8** 800 MHz	**7** Duplex	**12** 12 Watts

GENERAL DESCRIPTION

The TMX-8712 provides a mobile communications service in the GE MARC systems. Features include:

- Full duplex capability
- EIA continuous duty duplex operation
- Digital processing of signalling tones
- 36 area, 9 group capability
- 10 number memory with last number redial.

The radio is programmed using an IBM compatible personal computer equipped with a RS-232 serial interface connector. A GE supplied RS-232 interface box and cable options are required also. The computer can program or reprogram the customer frequencies, tones, and options. Programming is done through the radio's system connector without opening the radio.

The TMX-8712 consists of the following assemblies:

- RF Board
- Audio Board
- Logic Board
- Power Amplifier/Duplexer Assembly
- Handset

RF BOARD

The RF Board includes the synthesizer, the transmitter, and the receiver circuits.

Synthesizer Circuit

The synthesizer generates all transmit and receive RF frequencies. The synthesizer frequency is controlled by the microprocessor located on the Logic Board. Frequency stability is maintained by a temperature compensated reference oscillator module. Transmit audio, which is processed on the Audio Board, feeds the synthesizer to modulate the VCO. The buffered VCO output drives both the transmitter exciter and the receiver mixer.

Transmitter Circuit

The transmitter consists of a fixed-tuned exciter module and a power control circuit. The exciter provides 200 mW output to drive the PA module in the Power Amplifier/Duplexer Assembly.

Receiver Circuit

The dual conversion receiver circuit consists of an 851 to 870 MHz front end section, a 45 MHz first IF, a 455 Hz second IF, and a FM detector. All audio processing is accomplished on the Audio Board. The radio has no noise squelch circuit.

AUDIO BOARD

The Audio Board provides all audio and tone processing for the receiver and transmitter. The board is capable of delivering 1 watt of receiver audio into an 8 ohm load. The Audio Board obtains all control signals from the Logic Board.

LOGIC BOARD

The Logic Board contains a microprocessor and associated memory circuits which include an EPROM for controlling the processor and a programmable "personality" electrically erasable PROM (EEPROM) to store customer frequencies, tones, and options. The microprocessor provides tone generation, tone detection, and frequency data to the synthesizer.

POWER AMPLIFIER/DUPLEXER ASSEMBLY

This assembly is mounted to the bottom of the radio assembly. The 200 mW output from the RF Board exciter drives a 20 watt PA module in the assembly. The module output feeds the TX port of the duplexer which delivers 12 watts to the antenna port. The duplexer separates the receiver and transmitter signal paths when connected to a common antenna. The RX port of the duplexer feeds the receiver input on the RF Board.

TMX HANDSET

The handset contains a microprocessor which interfaces the 18-key keypad and liquid crystal display to two serial data lines. The serial lines allow communication with the main radio microprocessor on the Logic Board.

AVAILABLE OPTIONS

PC PROGRAMMING OPTIONS

The radio is programmed using a IBM compatible personal computer equipped with a RS-232 connector. Option TQ3310 provides the RS-232 serial interface unit and the cable between the PC and the unit. (An auxiliary power supply for the unit is also included which is not needed to program the radio.) Option TQ3314 provides the TMX-8712 programming cable between the PC interface and the TMX system connector. PC programming software to run on the

PC is Option TQ3326 for 5.25 inch diskettes or Option TQ4326 for 3.5 inch diskettes.

SYSTEM CABLE OPTIONS

Two system cable lengths are available to extend the distance between the radio and the handset. Option CC02 (19B801348P2) extends the system cable 6 feet. Option CC03 (19B8011348P1) provides 18 feet.

POWER CABLE OPTION

20 foot power cable Option CC07 (19B801358P10) is available for installations requiring more than the standard 9 foot cable.

EXTERNAL ALARM (HORN) RELAY

External Alarm Relay Option SU01 (19A705499P1) is available to sound the horn when a call is received. This relay connects to the WHITE lead of the power cable and the battery. Refer to the interconnection diagram in this manual.

NOISE SUPPRESSION KIT

Noise Suppression Kit Option PD13 (19A148539G1) is available for installations where excessive alternator or electrical noises present on the power cable do not permit the radio to operate properly.

AUXILIARY POWER/HORN SWITCH

Auxiliary Power/Horn switch Option AU01 (19B801412G2) provides a power on/off switch and a horn on/off switch when the alarm relay option is used. Both switches connect in series with the power cable.

SPEAKER MUTE RELAY

Speaker mute relay Option V1015 is placed in series with the system cable between the handset and radio. The option provides an audio output connector to feed optional amplifiers or speakers. A relay mutes the audio when the handset is placed off hook preventing audio feedback in duplex operation.

SPEAKER/AMPLIFIER

External speaker/amplifier Option AA01 (19A705968P1) provides a 5 watt speaker/amplifier with volume control and on/off switch. Audio is connected to the amplifier by using speaker mute relay Option V1015. Power for the amplifier is obtained by splicing into the power cable to the radio.

SERVICE OPTIONS

Test Point Adapter Option TQ2356 allows receive audio monitoring and transmit audio injection without opening the radio. The adapter connects between the handset and the radio and provides test points on each of the 9 lines of the system cable.

Service cable 19A704875P1 provides an extension between the Audio Board and the Logic Board. Both sides of the Audio Board are available for servicing using the cable.

GE MARC SYSTEM DESCRIPTION

The GE-MARC V•E trunked mobile radio system permits improved access to available RF channels, freedom from annoyance by other users' conversations and a degree of privacy for the user. The trunked mobile radio system consists of a repeater for each channel and the users' mobile radio units. The system uses tone signalling with each mobile being assigned two and/or four tone group tone sequences. Groups of mobiles are assigned the same tones, so that any unit can talk to all other units in the same group.

When originating a call, the mobile identifies an idle repeater channel and interrogates it with a single burst of "busy" tone, the repeater keys its transmitter and sends a burst of "acquisition" tone back to the mobile unit. When the interrogating mobile detects the acquisition tone, it then transmits its collect and group tones, which the repeater regenerates for all idle mobile units in the system.
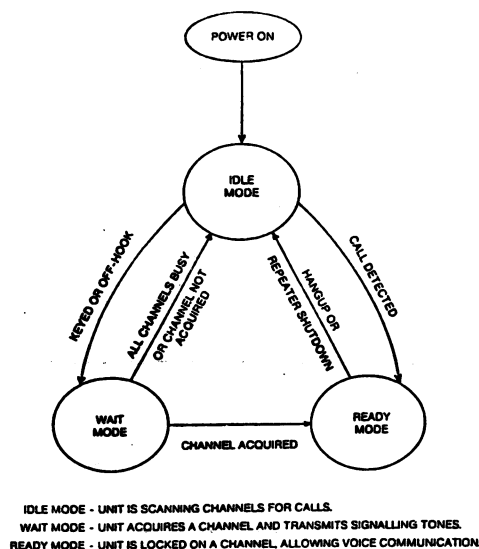
The idle mobiles, which continually scan all channels, will stop on the active channel if any of the programmed collect tones are detected and wait for group tone(s)

If the correct tone sequence is detected, the mobiles will alert the operator of an incoming call and open their audio circuits. If the correct sequence is not detected, the idle mobiles will resume scanning the channels. Once the mobile is "locked" on a channel, it will remain there until the repeater times out or the operator terminates the call.

OPERATIONAL MODES

The radio will always be in one of three operational modes: idle, wait, or ready. The three operational modes and the conditions that cause the radio to switch from one mode to another are shown in Figure 2.

The radio enters the idle mode when power is turned on and begins scanning channels for incoming calls. The wait mode is entered when the user places a call. The radio

IDLE MODE - UNIT IS SCANNING CHANNELS FOR CALLS.
WAIT MODE - UNIT ACQUIRES A CHANNEL AND TRANSMITS SIGNALLING TONES.
READY MODE - UNIT IS LOCKED ON A CHANNEL, ALLOWING VOICE COMMUNICATION.

RC-5290

Figure 2 - Operational Modes

remains in the wait mode until a channel is acquired, or if no channel is available. The ready or conversation mode is indicated by an alert tone and the mode indicator on the control panel.

A tone signalling Timing Diagram is shown in Figure 3.

Sequence Flow Charts for each operational mode are shown in Figures 4 and 6.

IDLE MODE (Figure 4)

When the radio is in the Idle Mode, the audio is muted and all channels programmed for call decode are sequentially scanned for an incoming call. An incoming call is identified by detecting one of the collect tones programmed in the area. Upon receipt of a collect tone, the mobile looks for a short interval for the group or individual tones, providing that their collect tones are the same. When no valid tone is found, the mobile will resume scanning the channels for an incoming call.

If a group (or individual decode) tone is detected the mobile then looks for busy tone for a 90 millisecond period. If four tones are properly decoded, the mobile will then look for busy tone for 270 milliseconds.

When no valid tones are found, the mobile will resume scanning for a call with the next channel. When a busy tone is found, the mobile will enter the Ready Mode. If busy tone is not detected, the mobile remains in the Idle Mode and continues scanning channels looking for an incoming call.

Removing the handset from the hanger, pressing the PTT switch or pressing the SEND key on the handset, will cause the radio to enter the Wait Mode.

WAIT MODE (Figure 5)

When the user enters the Wait mode, the group tone is checked to make sure it is a valid call-originate group. If it is not a valid, a high-frequency steady tone is heard in GE-MARC^{TM} V•E systems only. If valid, the radio will scan the call-originate frequencies for brief intervals until it finds one with no busy tone on it. If no channel is free, the radio will activate the Call Retry state if programmed for this option. This causes the radio to revert to the Idle mode and scan for a call while trying the Wait mode approximately every 20 seconds for five minutes. If no channel is available at the end of the 5 minute period or the Retry option is not programmed the mobile will sound a low-frequency tone, and then return to the Idle mode.

If a channel with no busy tone is found, the mobile transmits a burst of busy tone to acquire the repeater. The repeater then responds with a burst of acquisition tone. Upon receipt of the acquisition tone, the mobile proceeds to transmit the group tones (either two or four tones). If a four tone sequence is sent, the mobile must detect all four tones and busy tone before entering the Ready mode. If a two tone sequence is sent, the busy tone must be present within 90 milliseconds of the last tone in order for the radio to enter the Ready mode. If no busy tone is present, or if the four tone sequence isn't valid, the mobile will jump to the next channel in the call originate set and check for busy tone as described above.

READY MODE (Figure 6)

When an incoming call has been detected, or an idle channel has been acquired, the mobile enters the Ready mode. In this mode, the audio and push-to-talk circuits are enabled, the speaker is unmuted, and the operator is alerted an alert tone. The radio can then be used in the conventional push-to-talk manner with the radio remaining on the channel until the operator hangs up or the repeater drops the busy tone, causing the unit to revert to Idle mode.

─────── NOTE ───────
If a call is initiated and a sequence of five beeps is sounded, the user cannot access the radio system due to being out of mobile receive range or being inoperative. Any subsequent call will be ignored for 20 seconds.
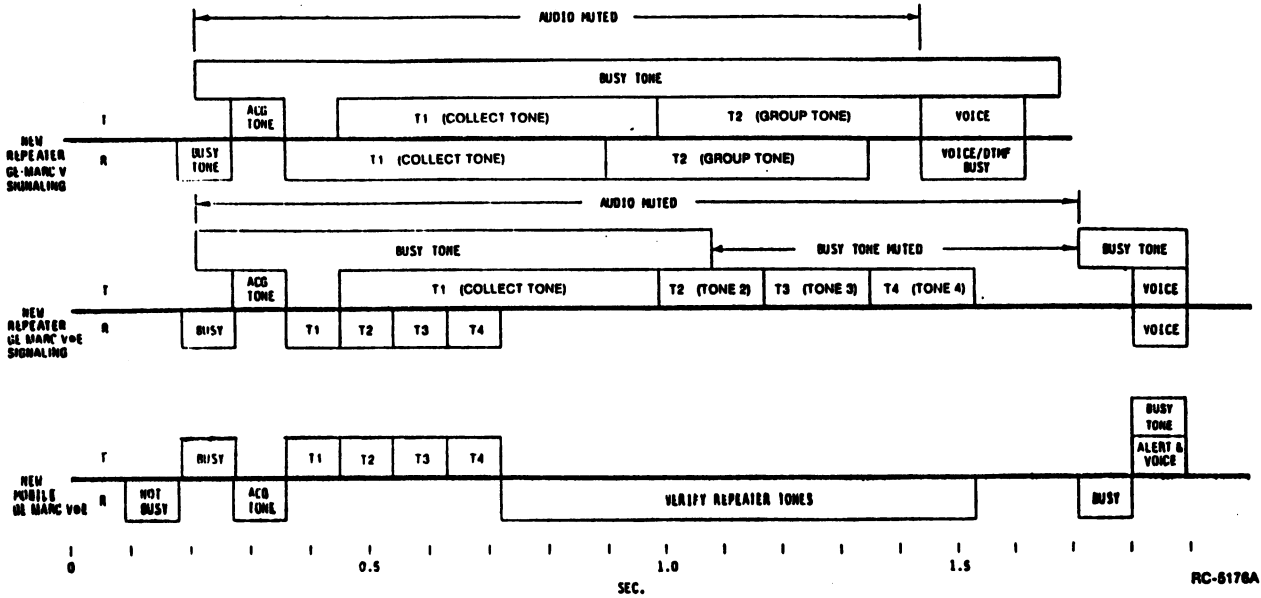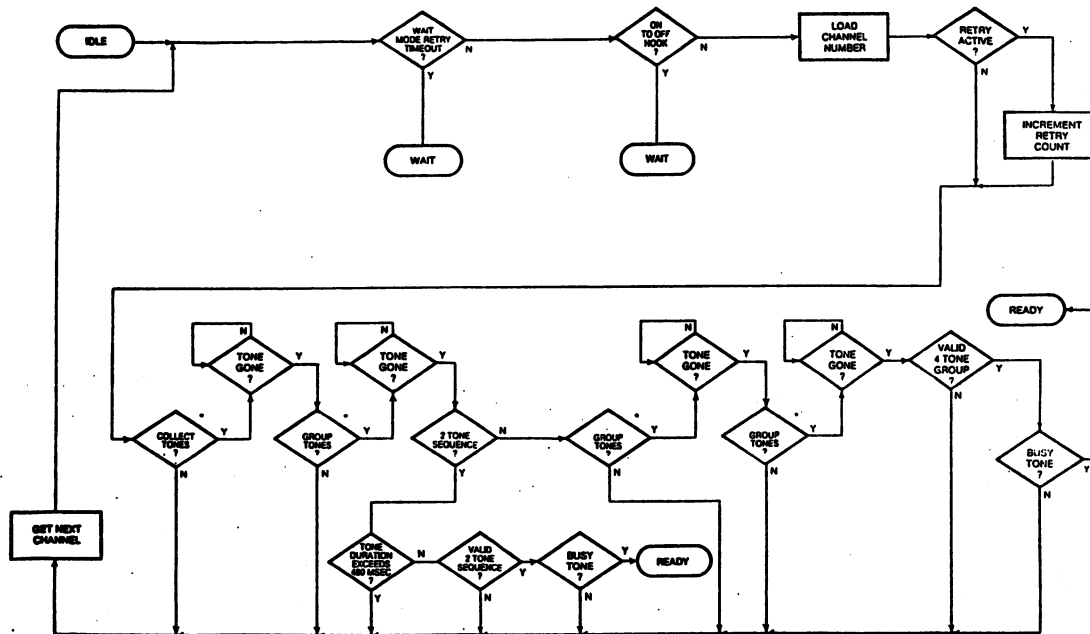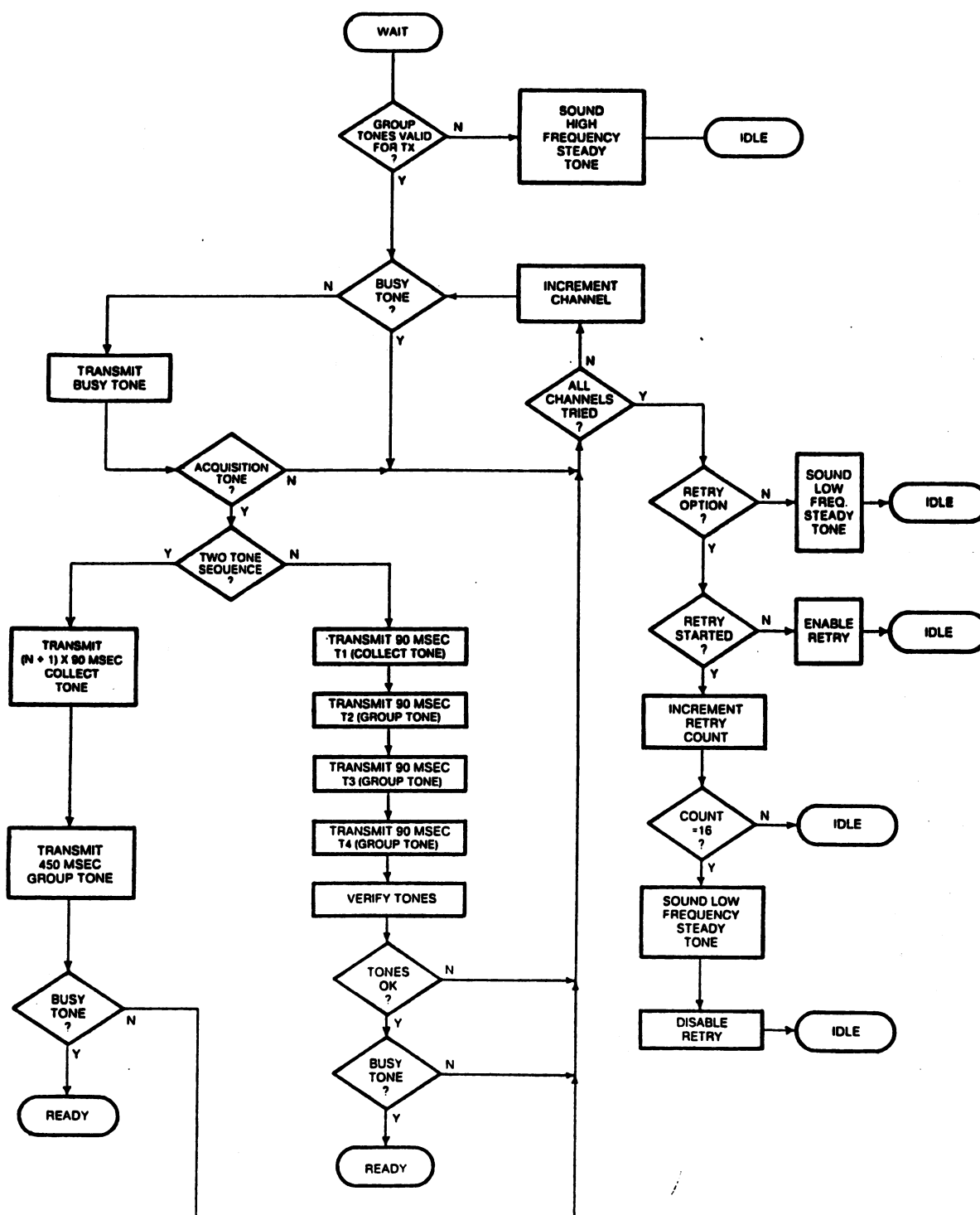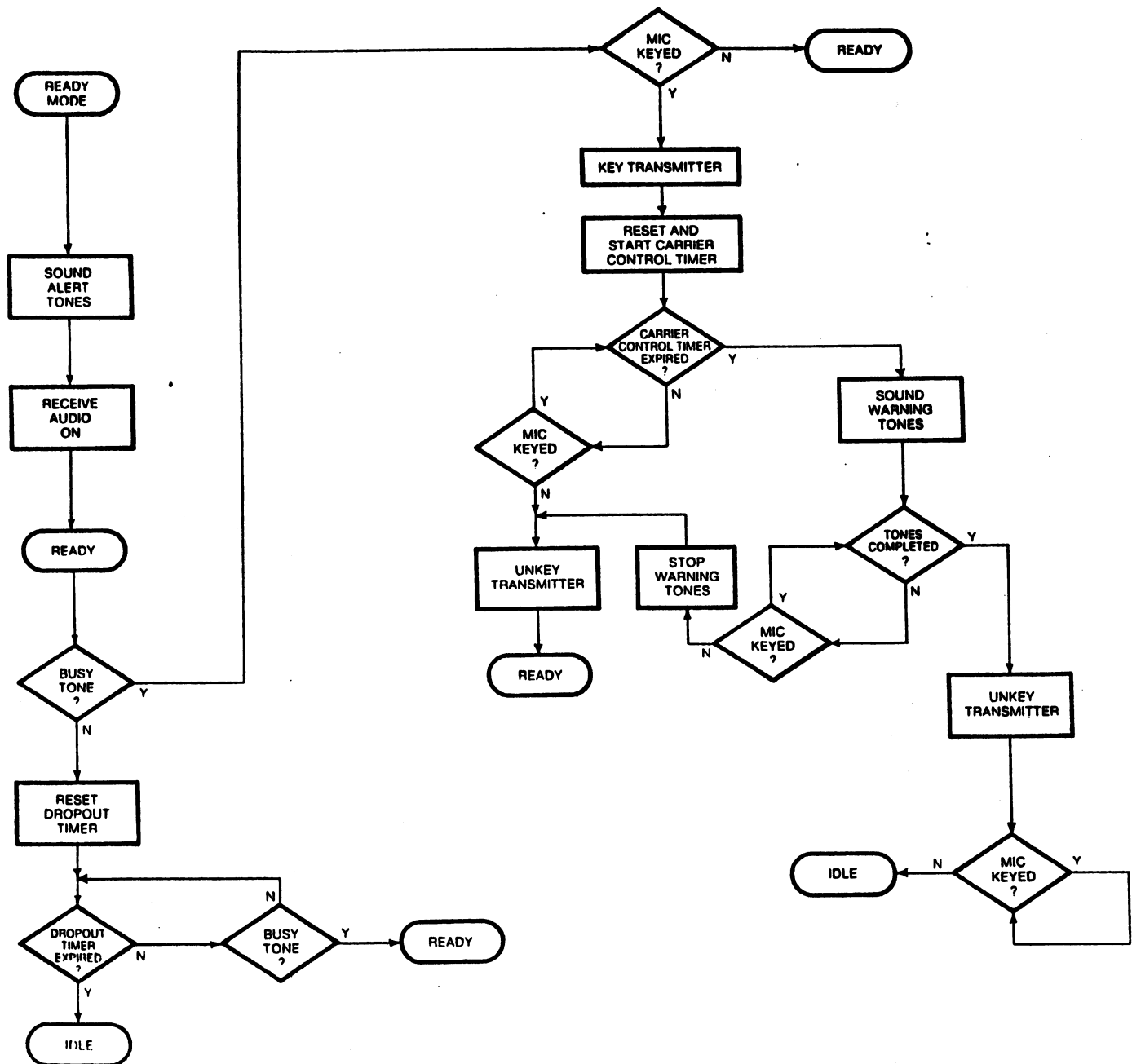
Figure 3 - Tone Signal Timing

Figure 4 - Idle Mode

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Figure 5 - Wait Mode

RC-5178

Figure 6 - Ready Mode

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GLOSSARY OF SYSTEM TERMS

Idle Mode

In the "standby" condition for a mobile, inactive, but prepared to call or be called, the trunked ratios are IDLE until they are turned off.

Wait Mode

In the "attempting origination" condition, the Wait mode is entered from Idle mode (only) as the user presses the PTT switch on the microphone, or comes "off-hook" (removes the handset, of the TMX-8510 only, from the hookswitch). If successful, the unit becomes READY. Otherwise, the unit is IDLE or IDLE/WAIT after all channels are tried.

Ready Mode

In the "operating:" condition, Ready is entered from Idle mode via Wait mode when calling, or directly from Idle when called. Ready mode ends (the ratio reverts to Idle) when the user disconnects or with loss of received Busy Tone from the repeater. This normally occurs when the repeater shuts down after communication is completed.

Busy Tone

A "voice-plus" tone 3051.9 Hz standard, 2918 Hz alternate tone modulates mobile and repeater transmitters at low level ($\pm$1 KHz deviation) continuously. This tone is filtered from received autio and is used to hold the communication channel active. It also excludes other mobiles from using the channel when a call is active.

Acquisition Tone

A tone (1962.9 Hz) sent at full deviation for 50 milliseconds from the repeater. It is used as acknowledgement from the repeater of a busy tone that was sent and signals the mobile that signalling tones can now be sent.

Collect Tone

A tone chosen from 38 standardized frequencies ranging from 508.6 Hz to 2792.4 Hz is used as the first tone in the group tone sequence The collect tone is used to gather all mobiles with the same collect tone for decoding a call. The duration of the tone varies as a function of the number of channels which are programmed into the mobile and/or repeater. In a two-tone call, the mobile sends the collect tone for a programmable duration. In the four-tone call, the mobile always sends a 90-millisecond collect tone which the repeater regenerates and sends for the correct duration.

Group/Individual Tones

Tones chosen from the 3 standard frequencies which follow the collect tone. In a two-tone call, the second tone is sent for 450 milliseconds. In a four tone call, the second, third, and fouth tones are sent for 90 milliseconds from the mobile, and 180 milliseconds from the repeater.

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RADIO OPERATION

Refer to the Operator's Manual provided with each radio for complete operating instructions.

VISUAL INDICATORS

Any display on the screen of the LCD indicates the unit is "ON".

AREA/GROUP

The AREA will be displayed on the left side and the GROUP will be displayed on the right side of the LCD display. A typical AREA 1/GROUP 2 display is:

```
Ar 1   Gr 2
```

If the Special Call is active, the display will show:

```
A 1   PhonE
```

RECEIVED CALL

When a call is received, the AREA and GROUP of the call are displayed. A typical display is:

```
A 1   CL   02
```
(Area 1, Group 2 call)

```
A 1   CL   id
```
(Area 1, Individual call)

A received telephone interconnect call will be displayed the same as an Individual Call.

ERROR

If the user tries to use an unprogrammed personality, feature, or an invalid key sequence is entered, ` Error ` will appear in the display and, at the same time, a three beep

alert signal is sounded. The previous AREA and GROUP will be displayed after 3 seconds.

PASSED

When the radio is first turned on, a self diagnostic test is performed. If the radio passes this test, a three beep alert signal is sounded and the display will show [PASSEd] for one second.

ERROR 1, 2, 3 or 4

This message is displayed to indicate that the radio is inoperative. Refer to the Service Section.

IN USE

The IN USE indicator in the lower right corner of the display will be visible each time the PTT switch is pressed.

```
   Ar 1  Gr 2
HORN      ROAM      IN USE
```
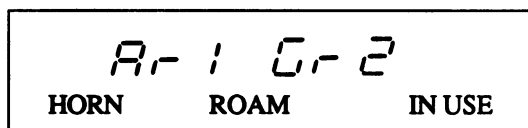
ROAM

The ROAM indicator in the lower center of the display will be visible whenever the radio is on a communications channel (ready to communicate or receiving a message).

HORN

The HORN indicator in the lower left corner of the display will be visible whlenever the Horn Alter Option is enabled

AUDIBLE INDICATORS

CALL RECEIVED ALERT TONES

The "Call Received" indicator consists of either a one or two tone alert sequence. If the received call is a GROUP call, a one tone alert is sounded. If the received call is an Individual Call, a two tone alert is sounded. (NOTE: The radio can be pre-programmed to mute the Call Received Alert Tones).

CHANNEL BUSY/NO CHANNEL AVAILABLE

If the channel is busy or no channel is available for communications, a low frequency tone is sounded for 1 second.

INVALID CALL ORIGINATE ALERT

When a user attempts to make a call with a GROUP that is not "enable" for call originate, a low frequency tone is sounded for 1 second.

CARRIER CONTROL TIMER

The Carrier Control Timer alert is a pulsed tone signal that is sounded when the PTT switch has been pressed continuously for a pre-programmed time. After nine seconds of pulsing, the transmitter is unkeyed and communications is interrupted. While the tones are pulsing, the user can release and press the PTT switch again to reset the timer and resume conversation.

SELF-CHECK TEST ALERT TONE

Three beeps are sounded immediately after the radio is turned on. This indicates that the radio has passed the self diagnostic test. The display will also indicate for one second:

```
   PASSEd
```

OUT-OF-RANGE/RADIO INOPERATIVE ALARM

Five beeps are sounded shortly after communication initiation (PTT). This indicates that the radio is out-of-range of the repeater station or, if the five beeps are sounded when the radio is within known range of repeater station, this indicates the radio is in need of service (even though the turn-on self diagnostic test of logic has passed) and your service representative should be contacted.

BASIC OPERATION

NOTE: There is no ON/OFF switch on the radio.

1. Turn the vehicle ignition switch on (or if the Power Switch Option is installed, place the power switch to the ON position).

2. When the radio is first turned on, a self diagnostic test is performed. If the radio passes this test, a three beep alert signal is sounded and the display will show [Error #] for one second and then the AREA and GROUP which were last selected will be displayed.

NOTE: Should the three beep alert not sound and/or the display shows contact your service representative.

3. Set the volume level using the ▼▲ (VOL/LITE) rocker type key. Four audio levels are available and each time the volume is changed, a short beep will sound to show the volume level.

4. Set the keypad backlight level by pressing the E(END/FCN) key and then the ▼▲ (VOL/LITE) key for each level of brightness (four levels).

NOTE: The volume and backlight levels will be retained in memory when the radio is turned off.

AREA SELECTION

Select the desired AREA by pressing and releasing the "*" (AREA) key to increment to the next AREA. Press E (END)/FCN) and then "*"(AREA) to reverse the direction of AREA (and GROUP) selection.

As an alternative to incrementing through each AREA, the AREA number may be entered directly by entering the desired number and then pressing the "*" (AREA) key.

GROUP SELECTION

Select the desired GROUP by pressing and releasing the # (GROUP) key to increment to the next GROUP. Press E(END/FCN) and then #(GROUP) to reverse the direction of GROUP (and AREA) selection.

NOTE: The SPECIAL CALL function will not be selected when stepping through the groups.

If the SPECIAL CALL function is desired, press E(END/FCN) and then press O(SPL CALL).

As an alternative to incrementing through each GROUP, the GROUP number may be entered directly by entering the desired number and then pressing the #(GROUP) key.

CHANNEL ACTIVITY

To provide quick access to communications channels, the GE MARC V/V●E trunked radio system continually monitors the activity on all the system channels. When a call is initiated, the trunked radio automatically seeks a non-busy channel and establishes contact on this channel. Once communications has been established, if a channel has not been active (microphone keyed) for six seconds or more the channel is disconnected; i.e. communications are interrupted. If this

occurs before the conversation is terminated, the call must be reinitiated.

To avoid confusion it is recommended that a procedure be set up so that the originator of the call is the one designated to re-establish communications.

PLACING A DISPATCH CALL

NOTE: As each key is pressed on the keypad, the display should be observed before proceeding to the next key. Pressing keys too rapidly in succession could result in incompleted or incorrect calls.

1. Select the desired AREA and GROUP

2. Depress the Push-To-Talk (PTT) switch on the inside of the handset (or remove the handset from its holder with a preprogrammed option) to originate the call. The IN USE indicator in the handset will be "ON" each time the PTT is pressed.

3. The radio will sound a three tone alert signal when you can begin the conversation. A steady low frequency tone will sound for one second if the call cannot be completed. If this happens, press the PTT bar again to retry the call.

NOTE: If a call is initiated and a sequence of five beeps is sounded, the user cannot access the radio system either due to being out-of-range or an inoperative radio. Any subsequent call initiate request at this time will be ignored for 20 seconds. However, if the area is changed, a call request may be initiated in the new area.
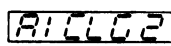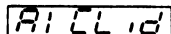
If the "Call Retry" option is active, the radio will try the channels at 5 second intervals for up to 15 times unless the E(END/FCN) key is pressed, a channel is acquired, or an out-of-range condition occurs.

5. While the call is in progress, the ROAM indicator in the display will be visible.

6. The call can be ended in one of three ways:

   a. Pressing the E(END/FCN) key or
   b. A channel disconnect or system timeout (after 6 seconds) of no channel activity (PTT) or
   c. Returning the handset to its holder (if the preprogrammed option "on-hook call terminate" is enabled).

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RECEIVING A CALL

When a call is received by the radio, alert tones are sounded to inform the user of the incoming call (unless the "mute received alert tone" option has been pre-programmed).

A single tone alert indicates a GROUP call a two tone alert indicates an INDIVIDUAL call. The display will show the user the AREA and GROUP of the received call in one of tow formats:

`A1CCG2`	Area 1, Group 2 call
	or
`A1CL id`	Area 1, Individual Decode call

Press the PTT switch to answer the incoming call.

Incoming telephone interconnect calls will be indicated with a two tone alert followed by ringing tones. The display will show an individual decode call.

DUPLEX OPERATION

When receiving an individual decode call, duplex operation is automatic if the auto interconnect feature is enabled. Otherwise the "key must be pressed to cause the radio to tnter the duplex mode when receiving a telephone interconnect call.

To change from duplex mode to simplex operation, simultaneously press CL(CANCLE) and * keys.

PLACING A TELEPHONE INTERCONNECT OR SPL CALL

NOTE: If you plan on a lengthy call (or several calls), the vehicle engine should be running to maintain battery charge.

1. Selected the designated AREA and GROUP numbers which are valid for telephone interconnect calls.

NOTE: As each key is pressed on the keypad, the display should be observed before proceeding to the next key. Pressing keys too rapidly in sluccession could result in incomplete or incorrect calls.

If duplex is enabled in the selected AREA, duplex operation will be automatic when a special call is placed.

2. Recall or enter the telephone mumber from the keypad (observing each number on the display as it is entered).

NOTE: If the number exceeds 8 digits, the first ones will roll off the left of the display as more are entered. Up to 15 digits may be dialed but only the last eight digits dialed will remain displayed.

NOTE: If, while dialing, you dial a wrong digit, press the CL(CANCEL) key. This will erase the entire number. You must then redial the entire number.

3. The call can be originated in either of three ways:

   a. Press the S(SEND) key or
   b. Press the PTT switch or
   c. Remove handset from its holder (preprogrammed option).

NOTE: If the telephone number was not entered previously, removing the handset from its holder will cause the radio to acquire a channel. Once a channel is acquired, recall or enter the telephone number and press S(SEND) key. If entering the number takes more than 5 seconds, depress the PTT switch periodically to keep the channel active while the telephone number is being entered.
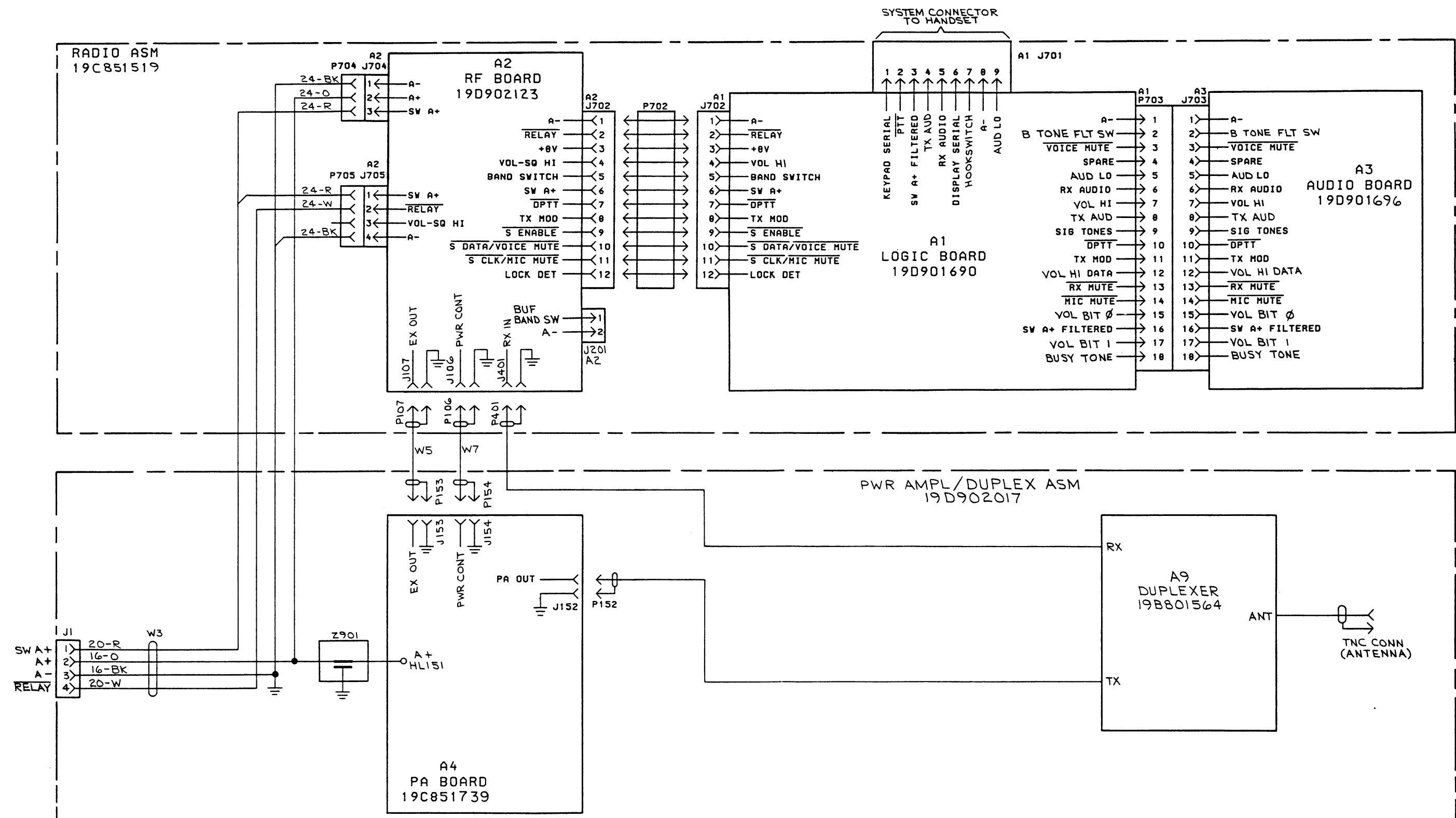
4. The call can be ended in one of three ways:

   a. Pressing the E(END/FCN) key or
   b. A system disconnect or system time out (after 30 seconds) or
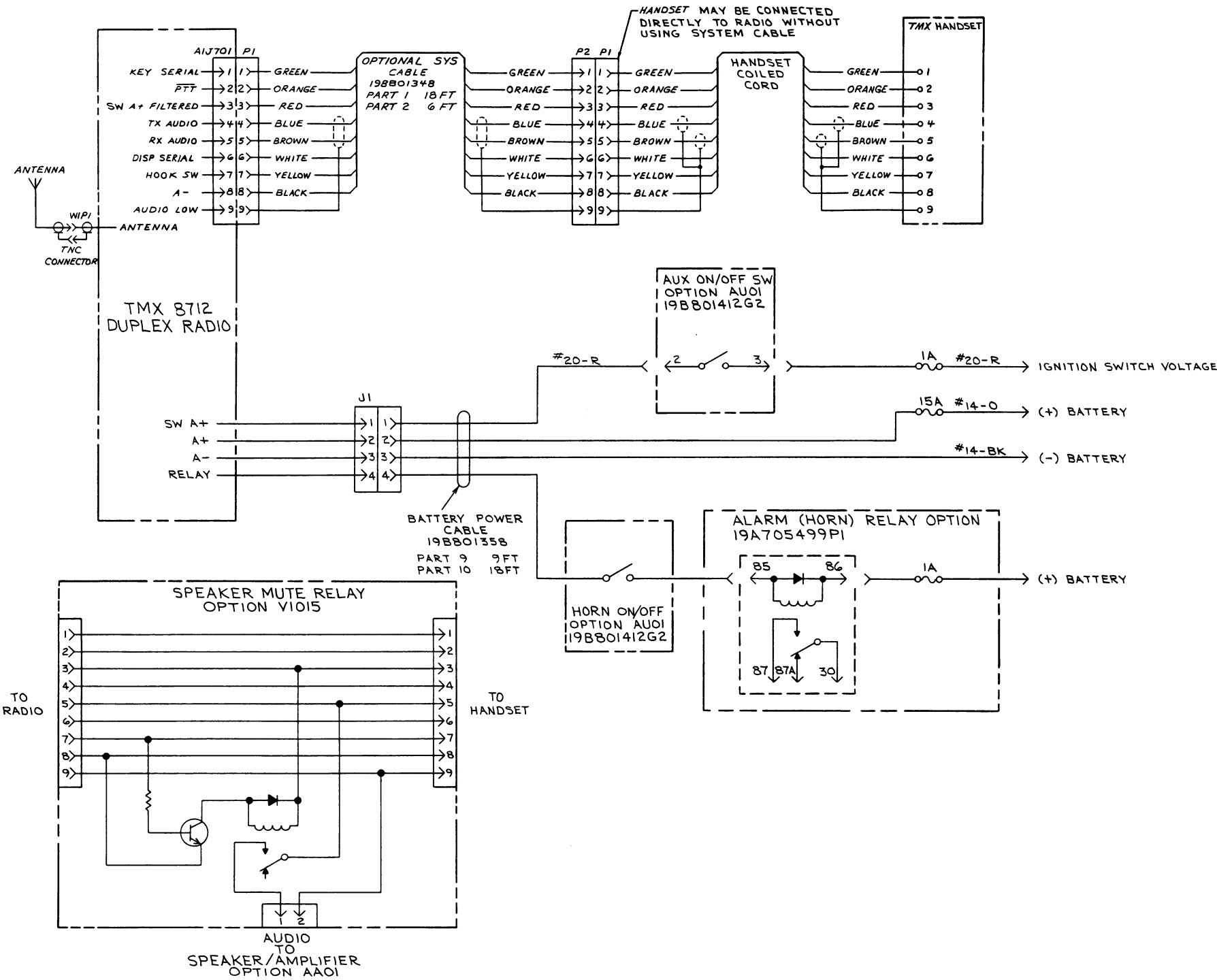   c. Returning the handset to its holder (a preprogrammed option).

GE Mobile Communications

(19D902204, Sh. 1, Rev. 0)

HANDSET MAY BE CONNECTED
DIRECTLY TO RADIO WITHOUT
USING SYSTEM CABLE

(19D902204, Sh. 3, Rev. 0)

PARTS LIST

TMX-8712
RADIO CHASSIS
19C851519G10
ISSUE 2

| SYMBOL	GE PART NO.	DESCRIPTION
A1	19D901690G5	Logic Board. (Refer to appropriate maintenance manual for parts list).
A2	19D902123G1	RF Board. (Refer to appropriate maintenance manual for parts list).
A3	19D901696G2	Audio Board. (Refer to appropriate maintenance manual for parts list).
		- - - - - - - - - - PLUGS - - - - - - - - - - -
P702	19B801359P5	Connector, 12 positions.
		- - - - - - - INTEGRATED CIRCUITS - - - - - -
U703	19A705688G1	Integrated Circuit. Includes:
	19A704422P2	Integrated Circuit, Prog. CMOS Read Only Memory (64K Ultraviolet Erasable).
U704	19A705553P1	Integrated circuit.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
		NOTE: Refer to RC-7166 for the position of the following items.
1	19B801397G4	Cover.
2	19C851505P1	Latch.
3	19D901728G1	Casting.
4	N130P1206B6	Screw, thread forming: No. 6-20 x 3/8.
5	N402P37B6	Flatwasher: No. 6.
7	19A702381P508	Screw, thread forming: TORX DRIVE No. 3.5-0.6 x 8.
11	19C851497P2	Power cable.
12	19A704941P1	Dust pad.
14	19A704944P1	Clip, spring tension.
19	19A705220P1	Clip, spring tension.
21	19A705282P1	Clip.
26	19A702381P508	Screw, thread forming: TORX DRIVE No. 3.5-0.6 x 8.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

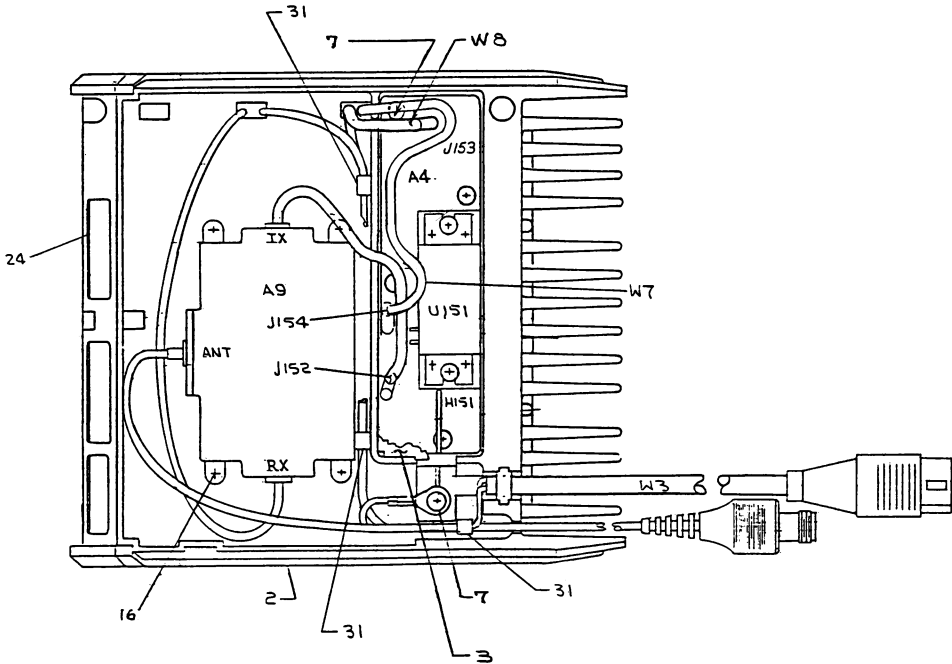POWER AMPLIFIER/DUPLEXER ASSEMBLY
19D902017G5
ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
A4	19C851739G1	Power Amplifier Board.
A9	19B801564P1	Duplexer.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - -
U151	19A143904P2	Integrated circuit, RF Amplifier.
		- - - - - - - - - - CABLES - - - - - - - - - -
W3	19C851585P8	Cable.
W7	19A704884P7	RF Cable Assembly.
W8	19A704884P8	RF Cable Assembly.
		- - - - - - - - - - FILTER - - - - - - - - - -
Z901	19A705333P1	Ceramic, high dielectric: 1000 pF +100% -0%, 50 VDCW.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
		NOTE: Refer to RC-7167 for the position of the following items.
1	19C851629G1	Cover.
2	19D901736G1	Casting, PA.
3	19C851621P1	Cover, shield.
7	19A702381P508	Screw, thd. form: No. 3.5-0.6 x 8.
16	19A702381P513	Screw, thread forming: TORX DRIVE No. M3.5 - 0.6 x 13.
24	19A704889P1	Nameplate.
31	19J706152P5	Retainer strap: sim to Panduit Corp. SST-1.

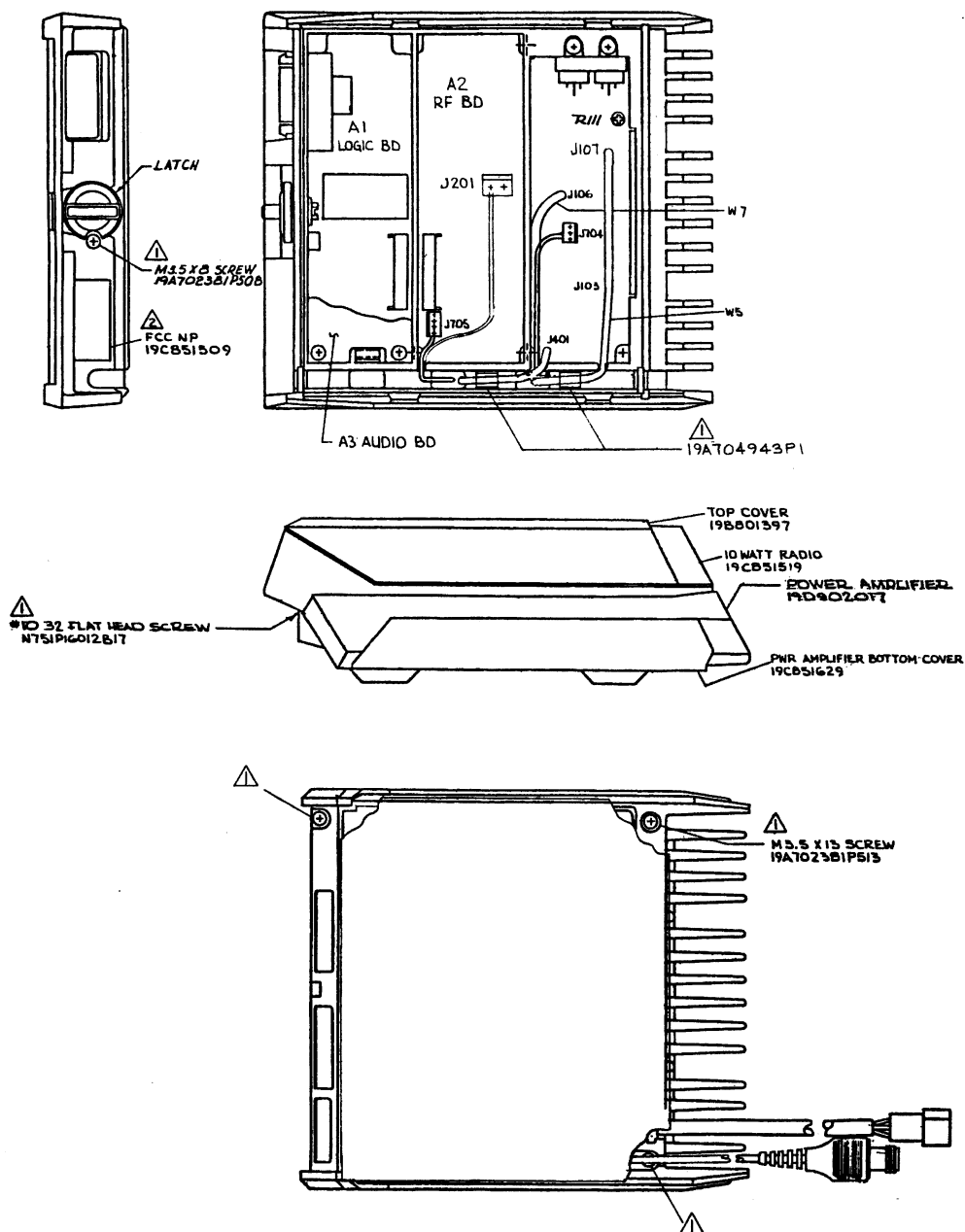*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

RADIO ASSEMBLY 19C851519G10
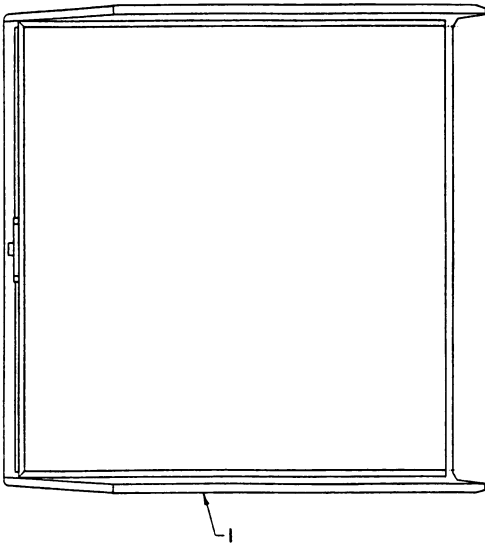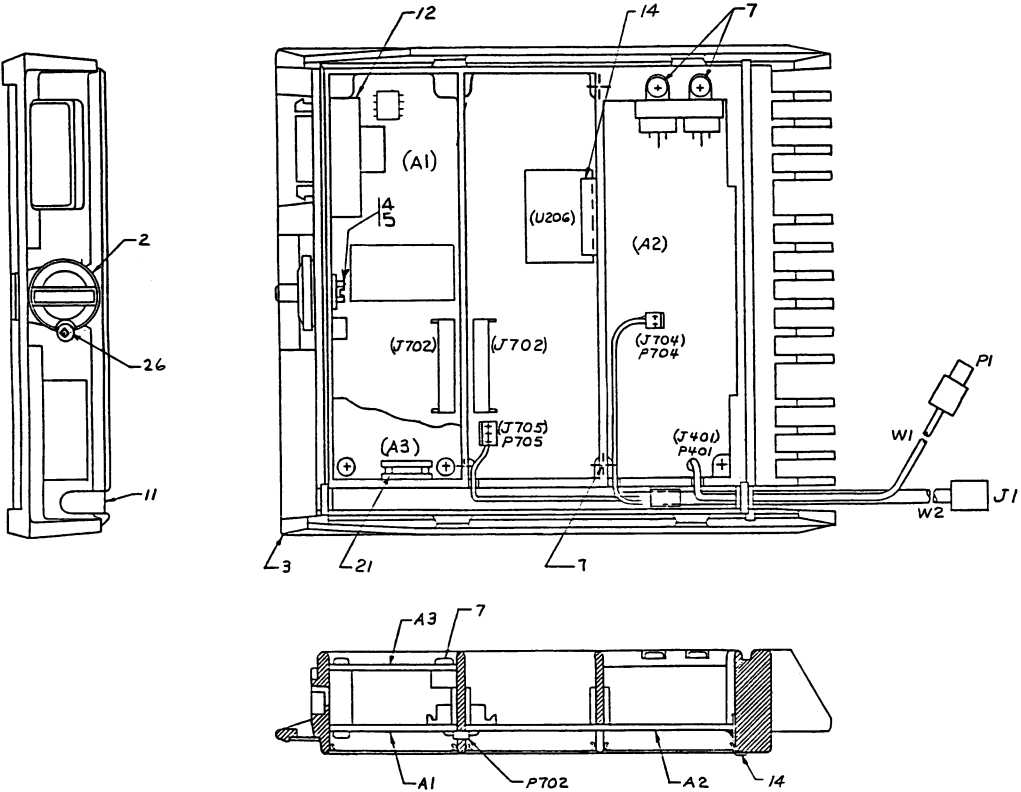
RC-7166A

POWER AMPLIFIER/DUPLEXER ASSEMBLY 19D902017G5

RC-7167

This addendum adds the 20 watt power amplifier assembly drawing 19C851520 to the manual.

Also, the part number for U703 is corrected to read 19A705688G2

NOTES:

⚠1 PART OF HARDWARE KIT 19A784916.

⚠2 MARK PER 19A784954.

(19C851520, Sh. 2, Rev. 1)