HONEYWELL KHF-1050 HF COMMUNICATION SYSTEM - DESCRIPTION AND OPERATION

1. General

A. The Model 208/208B airplane has the optional Honeywell KHF-1050 HF communication system installed to supply long distance communications. This section gives a description and operation of the HF antenna, KAC-1052 antenna coupler, HF remote control circuit breaker, KRX-1053 receiver/exciter, KPA-1052 power amplifier, and PS-440 controller.

B. The HF and HF PA RESET circuit breakers, found on the copilot's circuit breaker panel, supply the electrical power to the HF communication system.

C. To see the location of the optional HF antenna, refer to Figure 1 in Communication Antenna Locations - Description and Operation.

2. Description

A. KHF-1050 HF Communication System (Refer to Figure 1 G1000 System Software versions up to (v.2499.03) and Figure 2 for G1000 System Software (v.2499.08 and On).

(1) The KHF-1050 HF communication system is a solid-state design with 200 watts of peak envelope power (PEP) output. The KHF-1050 system operates in a frequency range from 2.0 to 29.9999 MHz, with 100 Hertz channel spacing. The system can be strapped to set the upper frequency limit to 22.9999 MHz.

B. HF Antenna.

(1) The HF antenna on the Model 208/208B is a short, steel-core copper-clad wire that goes from the fuselage near the left engine inlet to the vertical fin, near the leading edge of the horizontal stabilizer. The antenna goes through the fuselage and is connected to the antenna feed-thru assembly. The opposite end of the antenna connects to the antenna tension unit and is connected to airframe ground.

C. KAC-1052 Antenna Coupler.

(1) The antenna coupler is installed in the tailcone, above the baggage compartment. When the antenna coupler is in the receive mode, the antenna signals transmit through the antenna coupler to the KRX-1053 receiver/exciter and through the KPA-1052 power amplifier.

D. HF Remote Control Circuit Breaker.

(1) The HF remote control circuit breaker is installed in the tailcone, aft of the baggage compartment. The circuit breaker is a 35 amp, single pole single throw remote controlled circuit breaker. The circuit breaker supplies 28 VDC to the KPA-1052 power amplifier.

E. KRX-1053 Receiver/Exciter.

(1) The receiver/exciter is installed in the tailcone, aft of the baggage compartment. The receiver/exciter is a high frequency receiver and a low level transmitter. The receiver/exciter supplies the KPA-1052 power amplifier a low power signal.

F. KPA-1052 Power Amplifier.

(1) The power amp is installed in the tailcone, aft of the baggage compartment. The power amplifier amplifies the transmitter signal from the KRX-1053 receiver/exciter.

G. PS-440 Controller.

(1) The controller is installed in the lower left area of the instrument panel, adjacent to the oxygen control valve. The controller controls the HF communication system through an ARINC 429 bus. The HF data is shown on the controller LCD display.

3. Operation

A. KHF-1050 HF Communication System (Refer to Figure 1).

(1) The KPA-1052 power amplifier amplifies the excitation signal from the KRX-1053 receiver/exciter to 200 watts PEP, or 50 watts of carrier power in the AM mode. The amplified signal goes to the KAC-1052 antenna coupler. The antenna coupler makes the different impedances of the antenna equal to the 50 ohm output of the transmitter. In the receive mode, signals from the antenna go through the antenna coupler to the receiver/exciter through the power amplifier.

(2) The PS-440 controller has an inner knob to control the power for system operation and volume. Push the inner knob to supply power to the system. Push and hold the inner knob for three seconds to stop power to the system.

(3) A built-in test occurs when power is applied to the system. The test can also be done when the TEST button is

pushed on the controller for three seconds. The test will continue for 30 seconds. If any problems are found, the system will enter the fail mode.

(4) The KHF-1050 HF Communication system has four different types of squelch with related values as shown below:

(a) Syllabic Squelch High (SBH) - SBH is the default squelch, and is usually best for normal voice communication. A syllabic squelch opens when a signal is received that has voice-like qualities, and ignores other signals. With syllabic squelch, there is the possibility that the first syllable of the voice reception is squelched. The possible adjustment levels are OPN (open) with no squelching action, MIN (minimum), MED (medium), and MAX (maximum).

(b) Syllabic Squelch Low (SBL) - SBL is also a syllabic squelch, and is used for voice communications where the necessary signal is very weak and noisy. This squelch is more likely to open on noise than the SBH squelch. The possible adjustment levels are OPN (open) with no squelching action, MIN (minimum), MED (medium), and MAX (maximum).

(c) Signal Strength Squelch High (SQH) - SQH is the traditional signal-to-noise squelch best used for listening to non-voice signals, or voice signals that do not respond well to one of the syllabic squelches. The possible adjustment levels are from 1 to 32, with 1 being open.

(d) Signal Strength Squelch Low (SQL) - SQL is a signal strength squelch that opens on any strong input signal. The squelch opens quickly on strong signals and also opens on strong noise or static. This squelch is recommended for use only on necessary signals that are strong and under low noise conditions. This squelch is useful for music broadcasts. The possible adjustment levels are from 1 to 32, with 1 being open.

(e) Set the squelch with the left knob. Turn it to the SQL position. The value of the active squelch is shown on the right bottom row. Push the FUNC button to cycle through the different types of squelches.

(5) To tune a frequency, turn the left outer knobs to FREQ. The frequency will be shown on the controller and the RX annunciator will also show a receive frequency. Turn the right inner and outer knob to change the frequency. The inner right knob changes the frequency in 0.001 MHz (1 KHz) increments. The outer knob changes the frequency in 0.1 MHZ increments.

(6) The controller also has 100 programmable channels available. Channel 00 is always tuned to 2.182 MHz. There are also six emergency channels (EMR 1 thru EMR 6) that are available, five of which can be programmed. EMR 1 is always tuned to 2.182 as default, and cannot be changed. A mode can also be assigned.

(a) To select frequencies that are already programmed in a channel:

1 Turn the left outer knob to CHAN. The last selected channel will be shown.

2 Turn the right inner or outer knob to select the necessary channel number.

3 Momentarily push the push-to-talk button on the microphone to tune the antenna to the new channel frequency.

(b) To program frequencies to a channel:

1 Turn the left outer knob to CHAN.

2 Push and hold the FUNC button for approximately three seconds. The channel window will flash to show that it is in the programming mode.

3 Turn the right inner or outer knob to select the necessary channel number.

4 Push the ENT button on the end of the right knob. The selected channel is stored and the receive frequency will start to flash.

5 Turn the right inner or outer knob to set the necessary emission mode.

6 Push the ENT button. The selected mode is stored and the transmit frequency will flash.

7 Push the ENT button to store the frequency. The next available channel number is shown in the display.

8 Push and hold the FUNC button for three seconds to exit the programming mode.

(c) To program the Emergency Channels:

1 Push and hold the EMER button for two seconds.

2 Push and hold the FUNC button for approximately three seconds. The channel window will flash to show the system is in the programming mode.

3 Turn the right inner or outer knob to set the necessary channel number.

4 Push the ENT button on the end of the right knob. The selected channel is stored and the receive frequency will flash.

5 Use the right inner and outer knobs to set the necessary receive frequency.

6 Push the ENT button. The receive frequency is stored and the MODE will flash. Only USB V is available when programming an emergency channel.

7 Push the ENT button again. The selected Mode is stored and the transmit frequency will flash.

8 Push the ENT button again to store the transmit frequency. The channel window will show the next available channel.

Figure 1 : Sheet 1 : KHF-1050 HF Communication System G1000 System Software versions up to (v.2499.03)

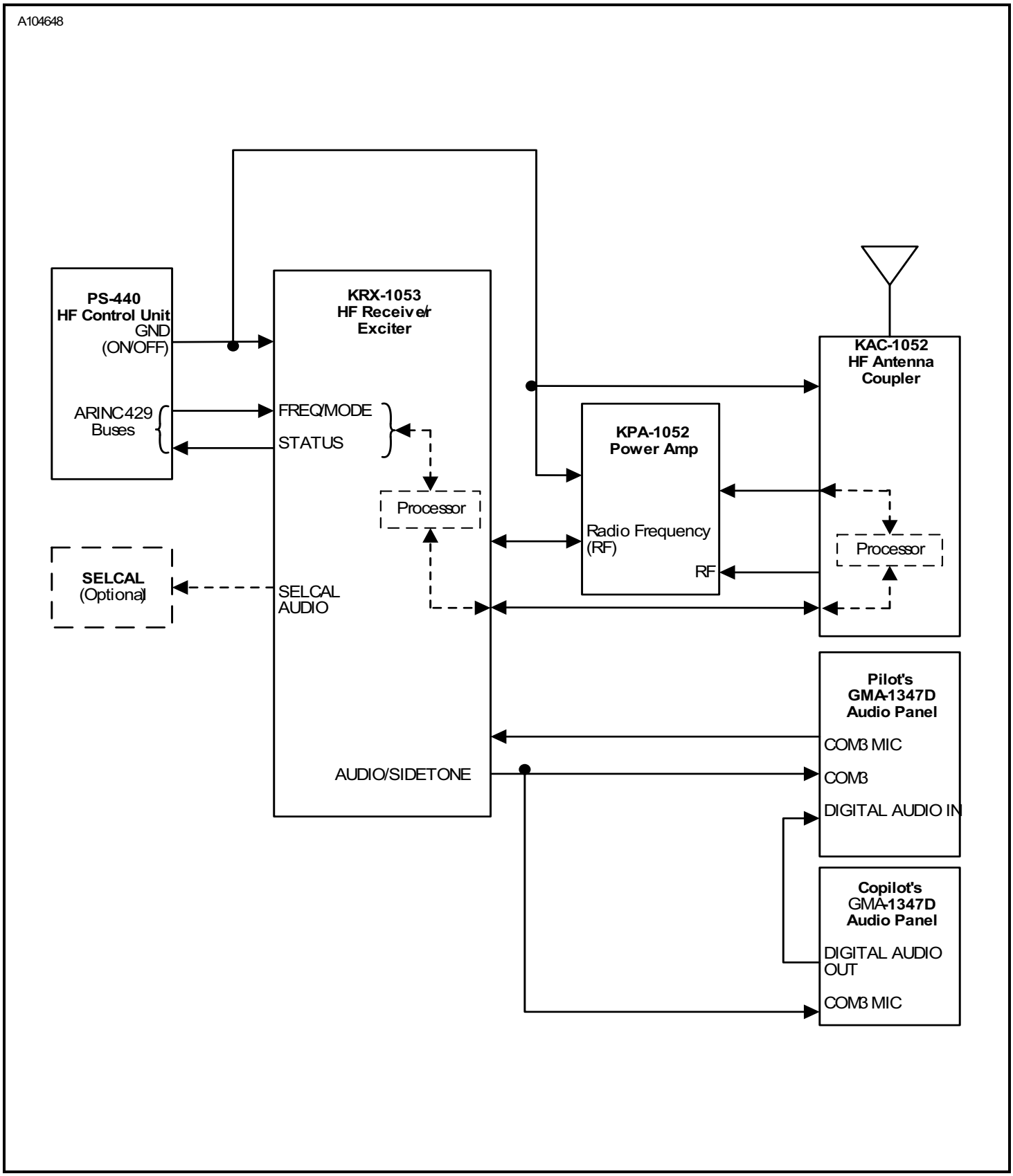

Figure 2 : Sheet 1 : KHF-1050 HF Communication System G1000 System Software versions (v.2499.08 and On)