Boeing 707

VHF - UHF communication

Training manual

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ABBREVIATIONS AND ACRONYMS

AM	Amplitude modulation
COMM	Communication
DF	Direction Finding
FM	Frequency Modulation
G	Guard
T/R	Transmit/Receive
UHF	Ultra High Frequency
VHF	Very High Frequency

1. VHF/UHF COMMUNICATION SYSTEM.

1.1. General.

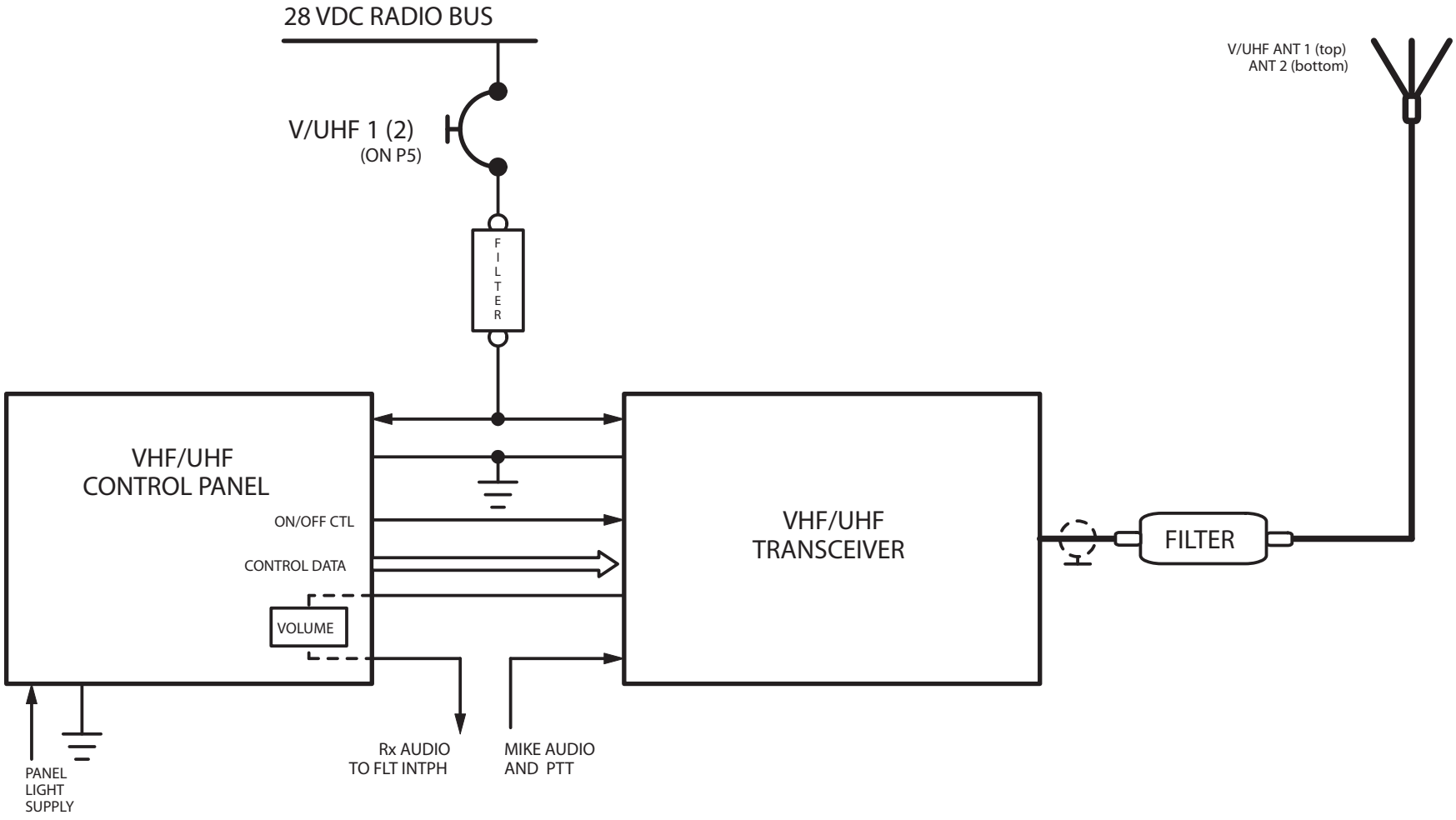
The aircraft is equipped with 2 vhf/uhf radio communication systems. Each system includes:

- One VHF/UHF transceiver,
- One control panel, and
- A V/UHF antenna.

The systems provides radio communication in the 30 - 400 mhz range.
The channel spacing is 8.33 Khz in the atc-band (118 - 136 mhz).
The channel spacing is 25 khz in all other bands.

1.2. System block diagram.

Each system receives a 28 VDC electrical supply input. The supply is filtered and then routed to the transceiver and the control panel in the cockpit. Both systems' circuit breakers are on the P5 circuit breaker panel. System control is provided through the digital VHF/UHF control panel, installed on the control stand. An on/off control discrete input from the control panel into the transceiver controls transceiver operation. The transceiver is off whenever the function, selector is in the off position. All remaining selections on the control panel are encoded on a digital data word and transferred to the transceiver through a serial data bus. The control panel functionality is illustrated and explained on the next page. The transceiver is connected to the associated antenna via a coaxial cable. A filter is included in the antenna line. The filter avoids interference in other aircraft equipment during v/uhf transmission. The audio signals to and from the v/uhf-transceiver is provided through the interphone junction box rj4. Microphone audio and 'push-to-talk' into the transmitter is provided directly from the junction box. Receiver audio to the crew is wired in 'interphone junction' via the control panel. The control panel provides reception audio control.



VHF/UHF COMM BLOCK DIAGRAM

1.3. Control Panel, Functional Description.

When switching on the system, the control panel performs an automatic lamp test, in addition the transceiver is powered-up. During system operation the control panel transmits control panel data to the transceiver. All control panel selections are encoded in a digital format and routed to the associated v/uhf-transceiver. The control panel provides frequency or 'preset' channel selection, using the associated selectors and displays.

Function Selector.

OFF,	the transceiver is deactivated.
T/R,	transmit/receive mode.
TR + G (guard),	transmit/receive + receive on the guard frequency.
DF,	direction finding active.
TEST,	activates the system self-test.

Mode Selector.

EM,	Emergency frequency (243 MHz) is selected.
MAN,	manual frequency selection is active.
GD,	the 'guard' frequency is selected.
PRE,	'preset' frequency selection, channel selection.
LD,	for loading new preset frequencies.

AM/FM Selector.
Allows the selection of frequency modulation in the lower UHF-band (225 to 399.975 MHz).

Squelch/Tone Selector.
Allows squelch on/off selection and, momentary 1.000 Hz tone.

Three Position Power Selector.
Allows the selection of high, medium or low transmission power.

FAIL Light.
Flashes during self-test. Illuminates steady, when a transceiver failure is detected.

Volume Control.
'Sets' the desired receive audio level.

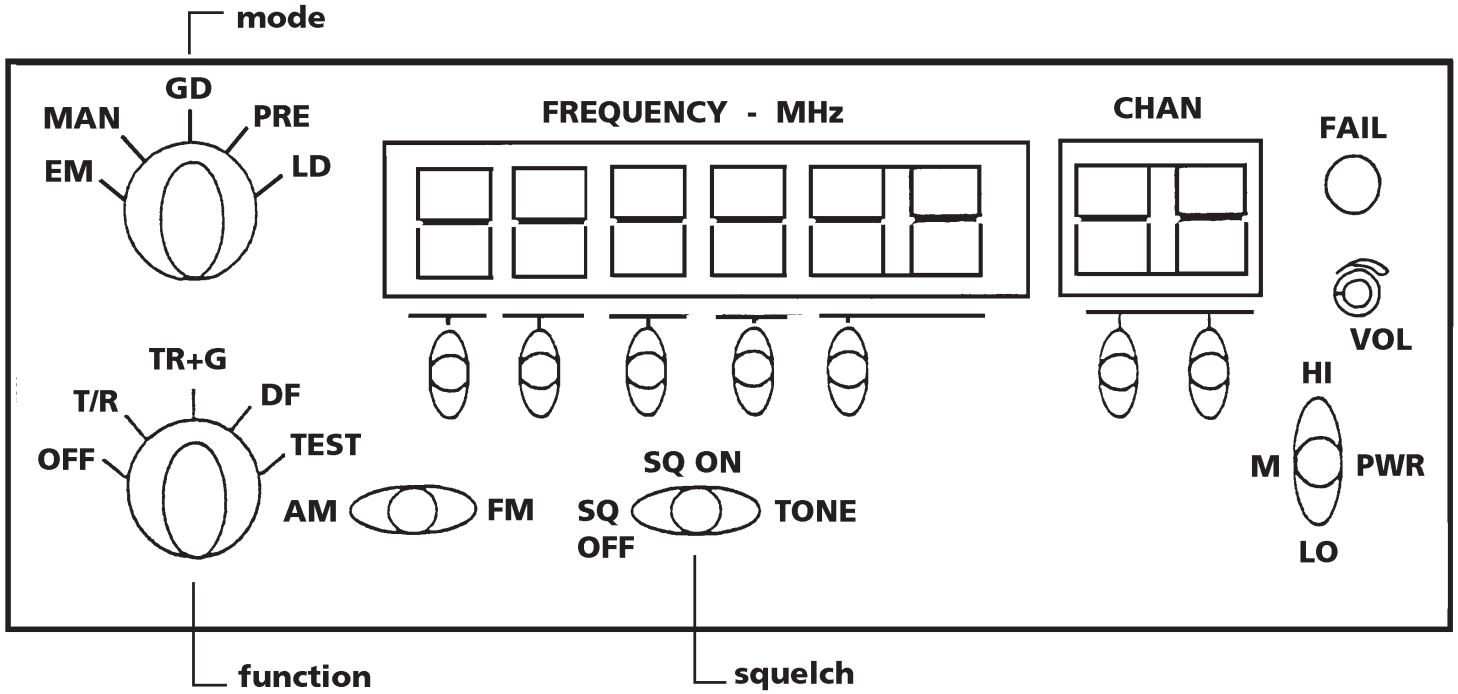
System Bite.
A self-test of the transceiver is available through selection of TEST on the control panel. The test-switch must be held in the momentary test-position.

During the transceiver test the FAIL-light will blink. If no fault is detected the FAIL-light eventually extinguishes and 'AOAOAO' is displayed on the frequency display, until the selector is released.

If a failure is detected the fail-light illuminates steady and a fault code (fault number) will be displayed, AxAxAx. The fault number(s) 'x' indicates the failed transceiver module.

0 = test OK, fault numbers 1 through 9 indicate the failed module.

In case of a warning condition, the FAIL-light illuminates steady and a warning code is displayed, PxPxPx, where: 1 = high temperature, 2 = high VSWR, 3 = low power supply.



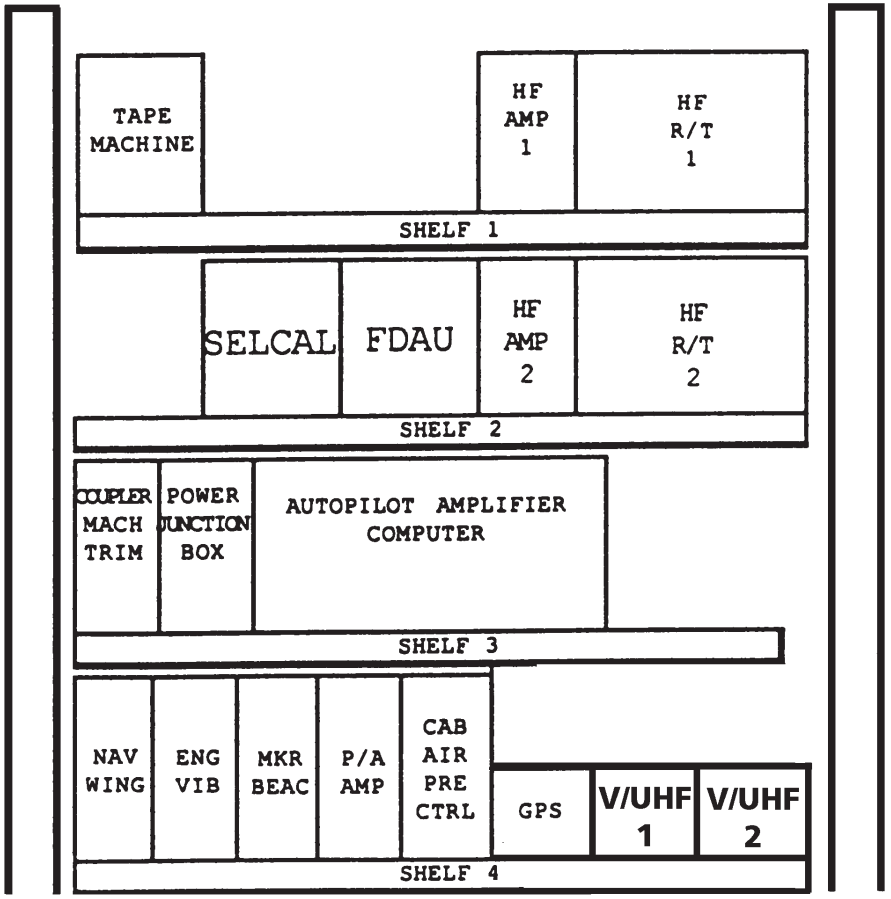
VHF/UHF CONTROL PANEL

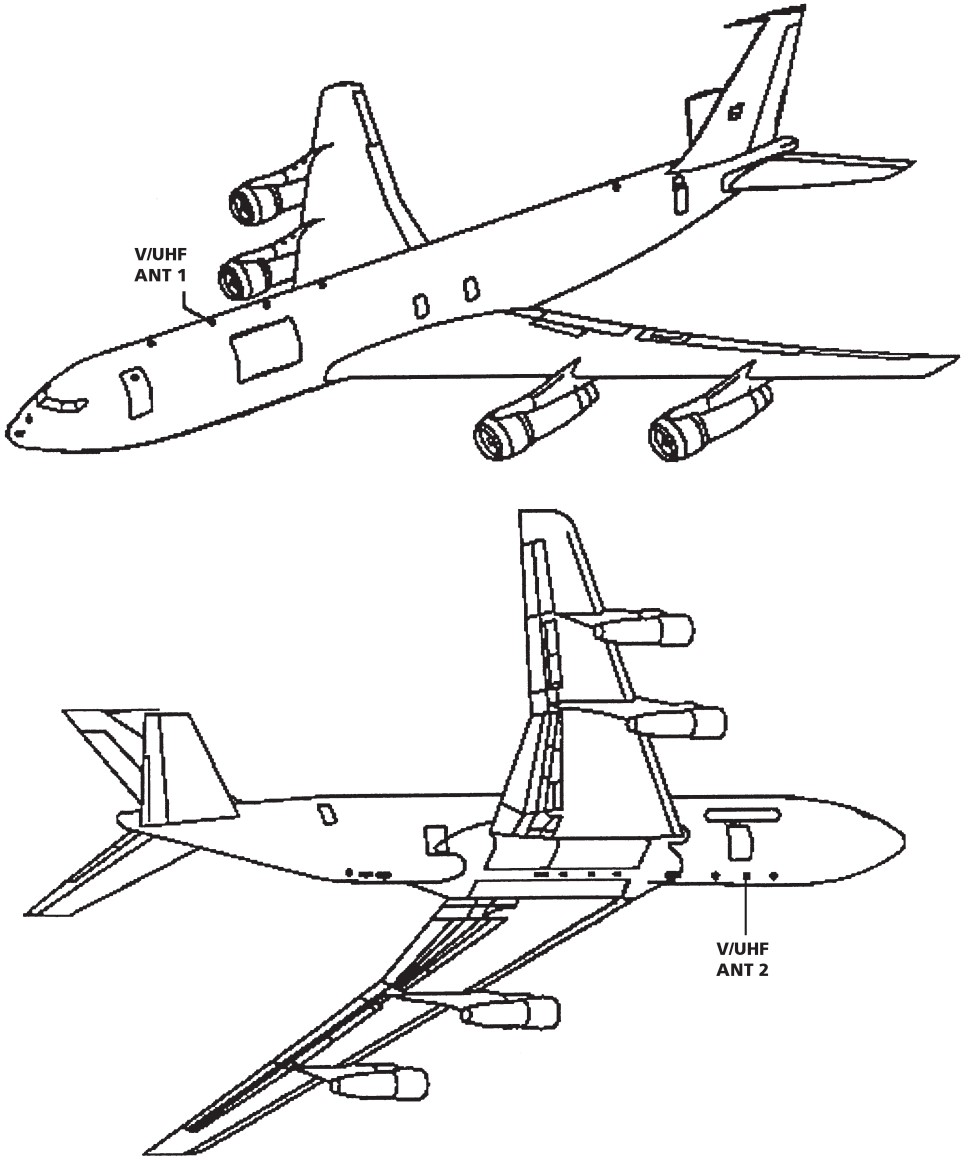
1.4. Component Location.

Both v/uhf-transceivers are installed on shelf-4 in the LH radio rack. Also in the avionics compartment:

- the systems power supply filters in RJ12,
- the 'antenna line filters' on the back of the transceiver shelf.

The antennas are located as illustrated, system 1 antenna on top and system 2 antenna on the bottom of the fuselage. Both v/uhf control panels are installed on the aft part of the center console (pedestal).





VHF/UHF COMM COMPONENT LOCATION

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