

6/10/02

USERS MANUAL

WELLSPRING SPREAD SPECTRUM TRANSCEIVER

FCC ID: OV6FHT100

This device complies with part 15 of the FCC Rules:

Operation is subject to the following conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received,
Including interference that may cause undesired operation

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device is designed to be installed by Wellspring professional personnel or their agents who will be trained by Wellspring. It will be installed in an area not normally accessible to the public such as a utility room or attic. It is not to be sold to the public.

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NOTE:

- Any equipment modification not expressly called out in this user's manual is prohibited.
- There are no user serviceable parts or adjustments inside the equipment.
- The user should not change antennas supplied with the unit as they are selected to give the best operating performance under the conditions of the install.
- Only professionals trained by Wellspring and who possess the installation tools and knowledge of the factors necessary for a successful installation are permitted to do the installation of Aqura equipment.
- The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter in order to assure RF exposure compliance.

INSTALLATION

Transceiver installation should be thoughtfully considered, as it is the single most determinate of successful operation.

- The unit should be installed in a location protected from the weather and extreme heat and cold.
- The unit should never be allowed to get wet.
- The unit should be installed in a location that has controlled access to avoid theft and vandalism.
- The unit should not be installed more than 100 feet from its furthest narrowband transmitter. This can be tested by using a test narrowband transmitter and the audio beeper capability of the transceiver to insure propagation.
- The power supply should be located nearby.
- It is proper to use the Spectrum Analyzer tool to determine the possibility of localized interference at your chosen installation site. Generally, the quieter the location (in a radio sense) the better the performance of the unit.
- Insure that ALL panel mounting screws are installed to offer the best protection from interference and vandalism.
- Transceiver reporting periods should be varied so that two units do not report out at the same time. If this is not practical, then select widely separated units to have the same reporting period.
- The SPOT tool should be used to test propagation. It can be generally assumed that if propagation is successful in one direction it will be good in the other direction (unless different antennas styles are used between the communicating units).
- Remote Transceivers indicate the beginning of the data download process by flashing the Morse code letter “B” at the green LED.

TRANSCIVER INDICATORS

LEDs

The transceiver has two LED indicators mounted on the front panel of the unit. The red LED indicates that power is supplied to the unit.

The Green LED has the following indicator codes to help the user and installer to determine proper operations.

The Green LED will blink each time a narrowband transmitter is received.

Morse code letters are used to indicate the following operations:

D (dash dot dot) Begin the Transceiver “D”ownload process. If the base station is connected and operational then the LED will stay on during the data download process.

B (dash dot dot dot) The transceiver has started the data transfer process.

W (dot dash dash) Indicates that the base station is “W”aiting for 40 seconds after a successful data download transaction with the remote transceiver. The “W” will continuously repeat during the waiting period.

BEEPER

With the Technician’s Data input/output cable installed in the Transceiver Data I/O port with the Beeper Ball option, it is possible to hear each time that a narrowband transceiver is detected. This is indicated by one or more beeps.

RF EXPOSURE CALCULATIONS

EUT : FHT100
FCC ID : OV6FHT100
Antenna Gain : 2.14 dBi

From §FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is $f/1500$, where f = frequency of transmission in MHz. The transmission frequency range is 920-924 MHz. A stricter limit will be obtained by using the low end of the frequency range rather than the high end. $L(\text{limit}) = 920/1500 = 0.613 \text{ mW/cm}^2$.

Maximum conducted peak output power is 123.1 dBuV, or 16.1 dBm, and maximum antenna gain is 2.14 dBi from the half-wave dipole antenna. The maximum radiated output power resulted in $P(\text{power}) = 66.7 \text{ mW EIRP}$.

To determine the minimum safe distance for uncontrolled exposure, the power is spread over the surface of a sphere of radius r . The r value at which the radiated power is equal to the limit is the minimum safe distance.

$$L = P/(4 \cdot \pi \cdot r^2)$$

$$r = (P/(4 \cdot \pi \cdot L))^{0.5}$$

$$r = 3.0 \text{ cm}$$

Notice in Installation Manual:

While installing and operating this transmitter, the radio frequency exposure limit may be exceeded at distances close to the transmitter. Therefore, the user must maintain a minimum distance of 20 cm from the device at all times the device is in operation.

The table below identifies the distance where the 0.6 mW/cm^2 exposure limits may be exceeded during continuous transmission using this device.

Peak output power		calculated RF Exposure Separation Distance(cm)	Minimum RF Exposure Separation Distance(cm)
dBm	mW	3.0	20
16.1	66.7		