

## Set up

### RF MODE SELECTION

Two modes provide the user with two different solutions to address local conditions and needs.

RF1 mode provides maximum protection against interference. And provides the most interference free performance when Wi-Fi speed or access is not a priority.

RF2 mode provides room for 2 additional audio channels with slightly improved latency and is best in environments where the Wi-Fi is well controlled or can be turned off.

By default, current Line 6 systems are set to RF2 mode (14 channel – 2 carrier mode). Alternately they may be switched to RF1 mode (12 channel – 4 carrier mode).

The current mode of operation will appear in the LCD window (XD-V 55/75) of the transmitter while it powers up. Alternately you can determine the mode while performing a “scan” in the “setup” mode. In this mode all Line 6 transmitters operating will show “To” (RF1 mode) or “Tx” (RF2) on the top line above the scan bars.

**CAUTION: you must select all systems (including Relay instrument systems) to operate exclusively on one or the other RF mode. You will likely take systems off the air if you accidentally try to operate both modes simultaneously.**

Mode selection takes place in the transmitters. Receivers (v2.x and above) will automatically switch over.

### To Set The THH12 Or TBP12 Transmitters (Including Relay G50/90):

- Enter Setup mode to display the current channel

Hold down the SELECT button until CHANNEL appears on the screen and continue holding SELECT. Then press and release the ON/MUTE button on the THH12 or VALUE button on the TBP12, then release the SELECT button. The display will briefly show [XD-V75 RF1] or [XD-V75 RF2] to indicate whether it is operating in the old or new mode, respectively. This setting is retained when the transmitter is powered off.

A more detailed explanation of the RF modes is here ...

[http://line6.com/support/page/kb/\\_/live-sound/xdv-digital-wireless-microphones/rf1rf2-mode-switching-frequencies-r90](http://line6.com/support/page/kb/_/live-sound/xdv-digital-wireless-microphones/rf1rf2-mode-switching-frequencies-r90)

Typically you can simultaneously run up to 12 channels in RF 1 mode, even in the presence of a moderate RF floor (provided there are no transmitters in the direct vicinity of the XDV receiver's antennas). In RF2 mode you can typically run 8 simultaneous channels with one active Wi-Fi channel in operation ... but ... you must carefully assign the Line 6 channels to correspond with the Wi-Fi channel in operation. You can "scan" for the best available channels by pushing the "setup" button and selecting operation "2". Operating all 14 channels together usually requires the absence of any 2.4G Wi-Fi channels in operation in the area of intended operation.

## ANTENNA PASS-THROUGHS

Up to four XDV-75 receivers can be connected to a single pair of whip or paddle antennas using the built-in antenna pass through jacks. It is important to connect these jacks using the supplied LMR-195 BNC/BNC cables, as they are double shielded. This avoids unwanted signal leakage from cable to cable in close quarters.

Connect external antennas to the A & B jacks on receiver 1. Then connect the A & B antenna out jacks on receiver 1 to the A & B antenna input jacks on receiver 2 and continue to loop through. No terminators are required nor should they be used on the last receiver in the chain.

Note: the last receiver in the chain could be an XDV-55 model if desired.

## AD-8 ANTENNA DISTRO

Larger systems can be setup using the AD-8 antenna distribution system, which can also supply operating power to up to 8 receivers (XDV-75 or 55).

Connect external antennas to either the front or rear antenna input connectors (BNC) and select the input using the front panel switch. Connect each set of antenna outputs to an individual receiver using

LMR-195 cables (supplied with XDV-75 but not with XDV-55). Should additional hookups be required you may use the antenna pass-throughs on any XDV-75 receivers in the system. However additional operating power will require the use of the factory supplied wall-wart power supplies or similar.

## ANTENNAS

The supplied whip antennas are half-wave units and provide approximately 5 dB of gain. They are essentially omni-directional in the horizontal plane. It is suggested for optimum performance that they be located in clear line-of-sight of the transmitters. It is also important to keep them at least 6 feet away from walls and other reflective surfaces as well as apart from any other antennas of other transmitters. Should Line 6 receivers need to be mounted in the same rack with other transmitters (e.g. IEM transmitters or Coms) then it is important to use remote antennas with one or the other system to avoid interferences.

Typically the antennas should not be parallel to each other. It is usually beneficial to splay the antennas 90 degrees apart from each other (typically each antenna is slanted 45 degrees outward). This typically ensures that at least one antenna will always be in correct polarity with the antenna of the transmitter no matter which way the transmitter is turned. When antennas are parallel it is possible that the transmitter could be turned into a position that finds both of the receiver's antennas in the dead zone of the transmitter resulting in dropouts.

## Paddle Antennas

Line 6 offers paddle antennas pairs with either omni (P360) or directional (P180) pickup patterns (in the horizontal field). They have built-in line amplifiers and are powered directly from the antenna input BNC connector on the XDV-75, 70, 55 and G-90 receivers. When powered up a small blue LED will be visible on the line amp housing.

Both models have a slide switch to adjust the amplification factor to make up for typical losses using RG-58 type coax (LMR-195 is recommended). The switch roughly corresponds to 15', 25' and 50' runs and should be set accordingly. Avoid the temptation to set this switch too high as that could result in overdriving the input stage in the receiver.

**P360** antennas pick up in a 360-degree pattern horizontally. This is most useful when transmitters may be roaming in both the front and backsides of the antenna. Avoid placing these antennas closer than 6 feet from walls as unwanted RF reflections may reduce your potential range.

**P180** antennas have a "live" side and a "dead side" (as marked on the front of the paddle). This is usually advantageous, as the dead side will reject RF coming from behind. But this requires the transmitters to always be in front of the antenna.

Note: Avoid placing antennas too high, as there will tend to be dead spots directly above and below them. Typically 6-8 feet above the floor will give the best results (assuming performers at floor level use the transmitters).

Antenna placement may require some experimentation for optimum results. RSSI indicators are included in the LCD window of V75 receivers. The triangles to both sides of the A and B at the bottom of the screen will show you the strength of the signal received independently from each antenna. Often you can improve the range of operation by operating the transmitters in the positions they will be used near during performance and observing the RSSI indicators as you move the transmitters around the performance area. Also take into account how your performer will be using the systems. If they place a transmitter behind their back that transmitter will not be in line-of-sight should the antennas be in front of the performer. In cases similar to this placing one paddle upstage behind the performer may be advantageous while placing the other 90 degrees to the side in a wing.

Depending on the degree of local interference, as with all wireless systems, you may need to locate the antennas closer to the transmitters and run the audio back to the mixing position.

Be aware of any Wi-Fi access points in the room and try to place the antennas as far away from them as possible while moving reasonably close to the transmitters.

In all cases it is highly recommended that you walk-test with your system during setup.

## 3rd Party Antenna Solutions

Many alternate 2.4G antenna solutions are available from 3<sup>rd</sup> party manufacturers. Carefully reading their specifications should produce many candidates. Be sure to check the polarity of the connectors and avoid using adaptors.