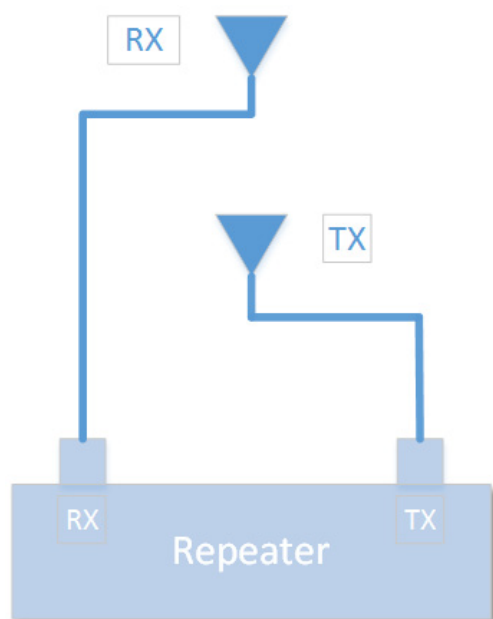


Repeater Filtering Configurations

The following pages describe a progression of Systems per site, from a single repeater to multiple repeaters in a trunking system.

Single Repeater: Separate Receive and Transmit Antennas



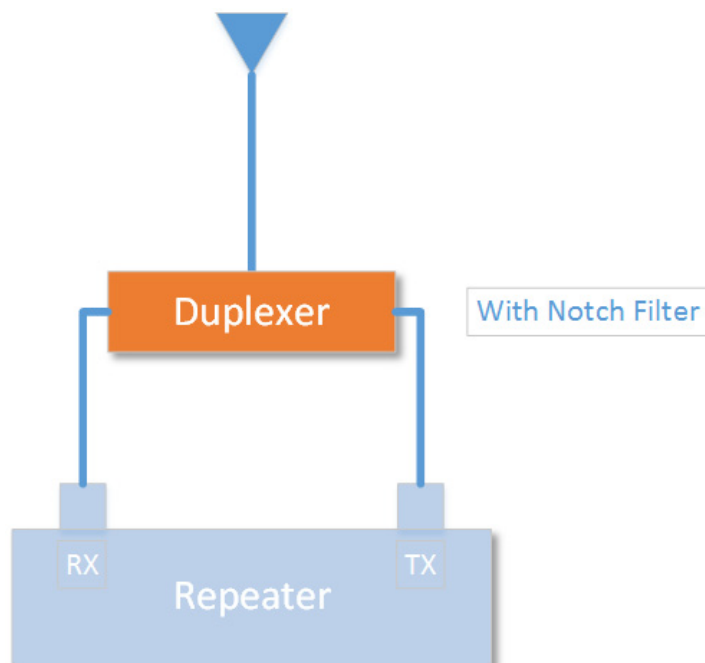
Characteristics

- An inexpensive configuration that is easy to set up.
- The RX and TX frequency split must be as wide as possible.
- Antennas must have proper vertical separation from each other. The Tip of the TX antenna should be 30 feet below the base of the RX antenna.
- Lack of filtering makes this configuration susceptible to any other signals that are present.

Applications

- For remote locations only. Use this configuration when this repeater will be isolated from any other signals. Not for Trunking applications.
- This configuration allows for frequency changes on-demand because there are no filters to adjust.
- You can use all necessary and legal licensed power in this application. There is very little loss.

Single Repeater: Single Antenna with Notch Duplexer



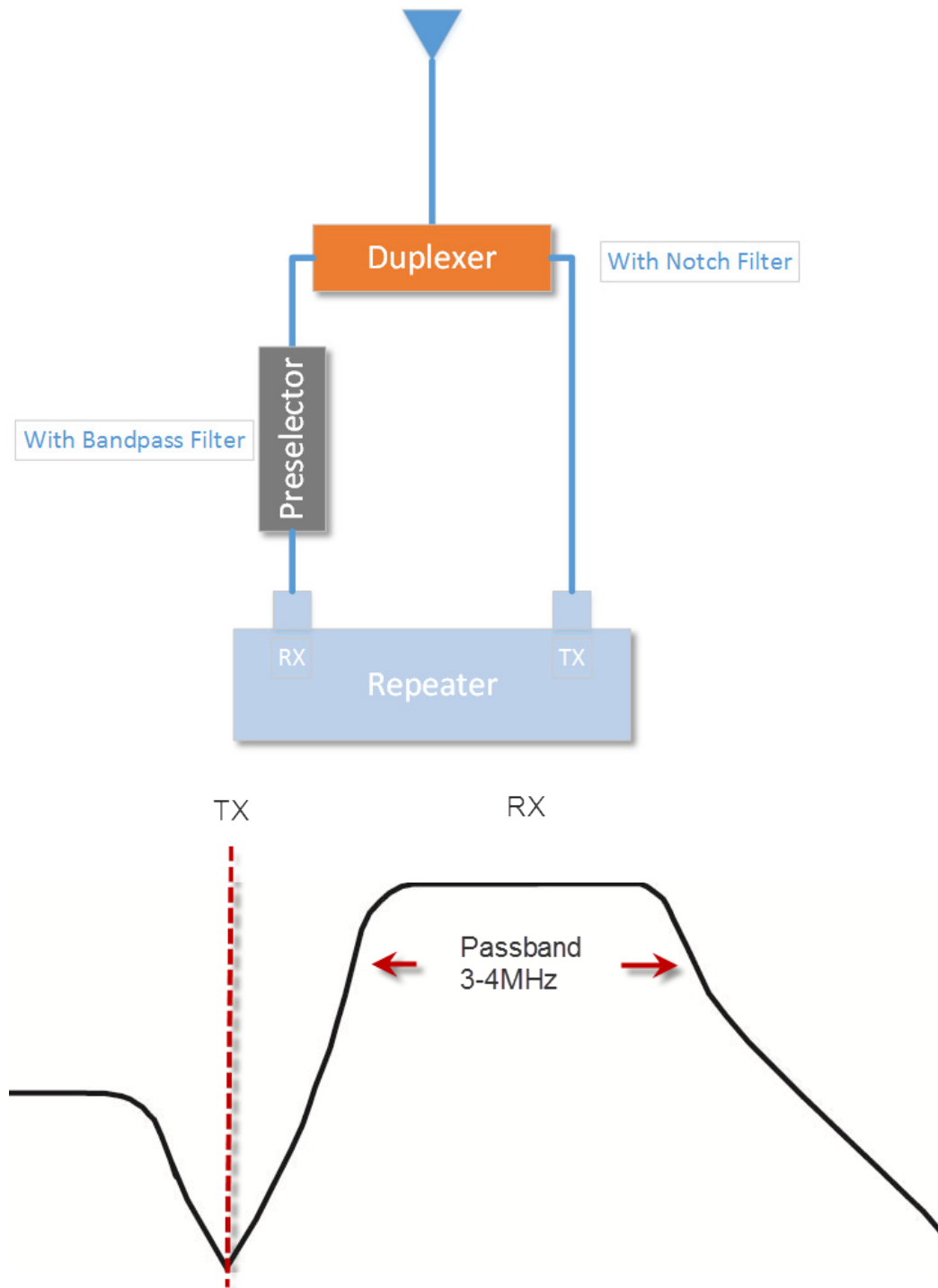
Characteristics

- The Duplexer enables use of a single antenna.
- The Notch-Filter Duplexer is a narrow filter that is set to “notch out” only the TX frequency so that the receiver isn’t overloaded by its own transmitter.
- The notch filter blocks *only* the TX frequency. Any other frequencies present on the location are passed through. There is no protection from any other transmitters.

Applications

- For remote locations only. Use this configuration at locations where this system is the only transmitter (signal source). Any prominent signals from other sources may affect this receiver. Not for Trunking applications.
- This system is used when the keeping costs down is a priority.
- The power should be no greater than 50W.

Single Repeater: Single Antenna with Notch Duplexer and Preselector



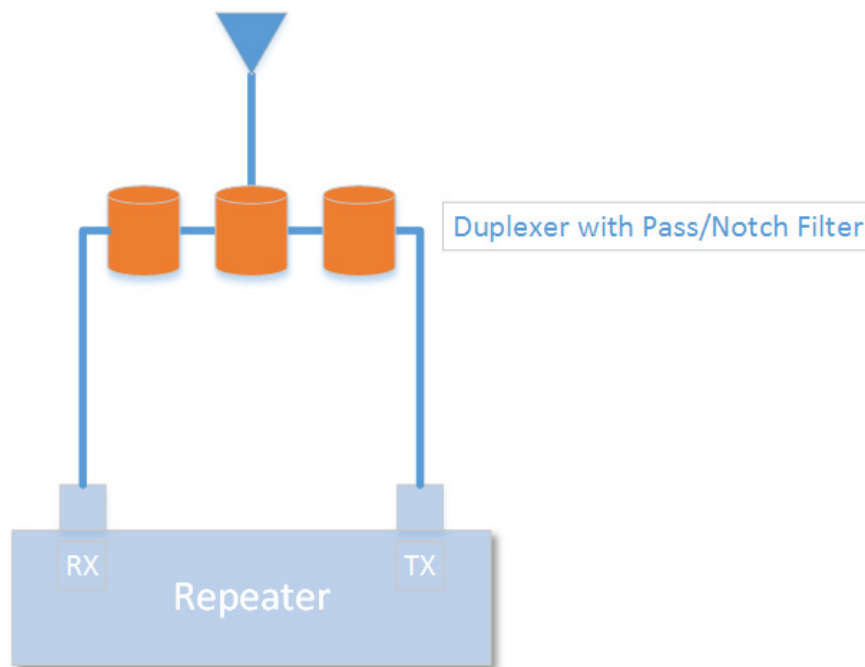
Characteristics:

- The Duplexer enables use of a single antenna.
- The Notch-Filter Duplexer is a narrow filter that is adjusted to “notch out” only the TX frequency so the receiver isn’t overloaded by its own transmitter.
- The notch filter blocks *only* the TX frequency. All other frequencies are passed through. There is no protection from any other transmitters.
- The Preselector is a bandpass filter that adds additional isolation to the RX signal and filters out some frequencies other than the TX frequency.

Applications

- Use for sites that have a high noise floor or a limited number of other transmitters close by. Not for Trunking applications.
- This is a lower cost alternative to using a Pass/Notch cavity Duplexer.
- The power should be no greater than 50W.

Single Repeater: Single Antenna with Bandpass/Notch Duplexer



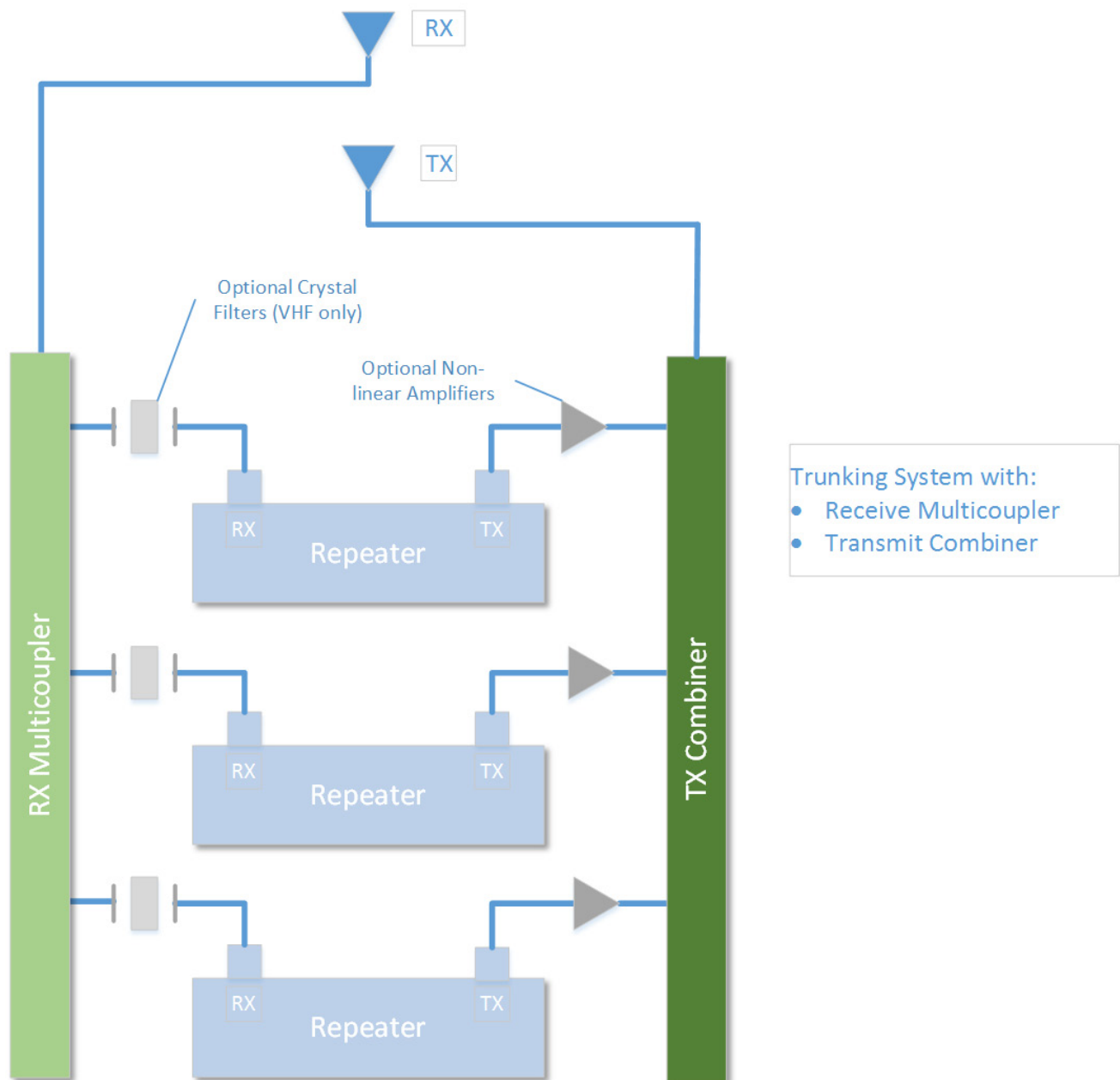
Characteristics

- The Duplexer enables use of a single antenna.
- The Duplexer has both a notch filter, and a bandpass filter. This combination of capabilities “notches” out the TX frequency *and* filters out some other external transmissions.
- The bandpass/notch filter provides moderate filtering for conventional sites while keeping costs down.

Applications

- Use in Remote Locations or sites where other transmissions will be limited. Not for Trunking applications.
- The power can be as much as 100W.

Multiple Repeaters: Two Antennas with Receive Multicoupler and Transmit Combiner



Characteristics:

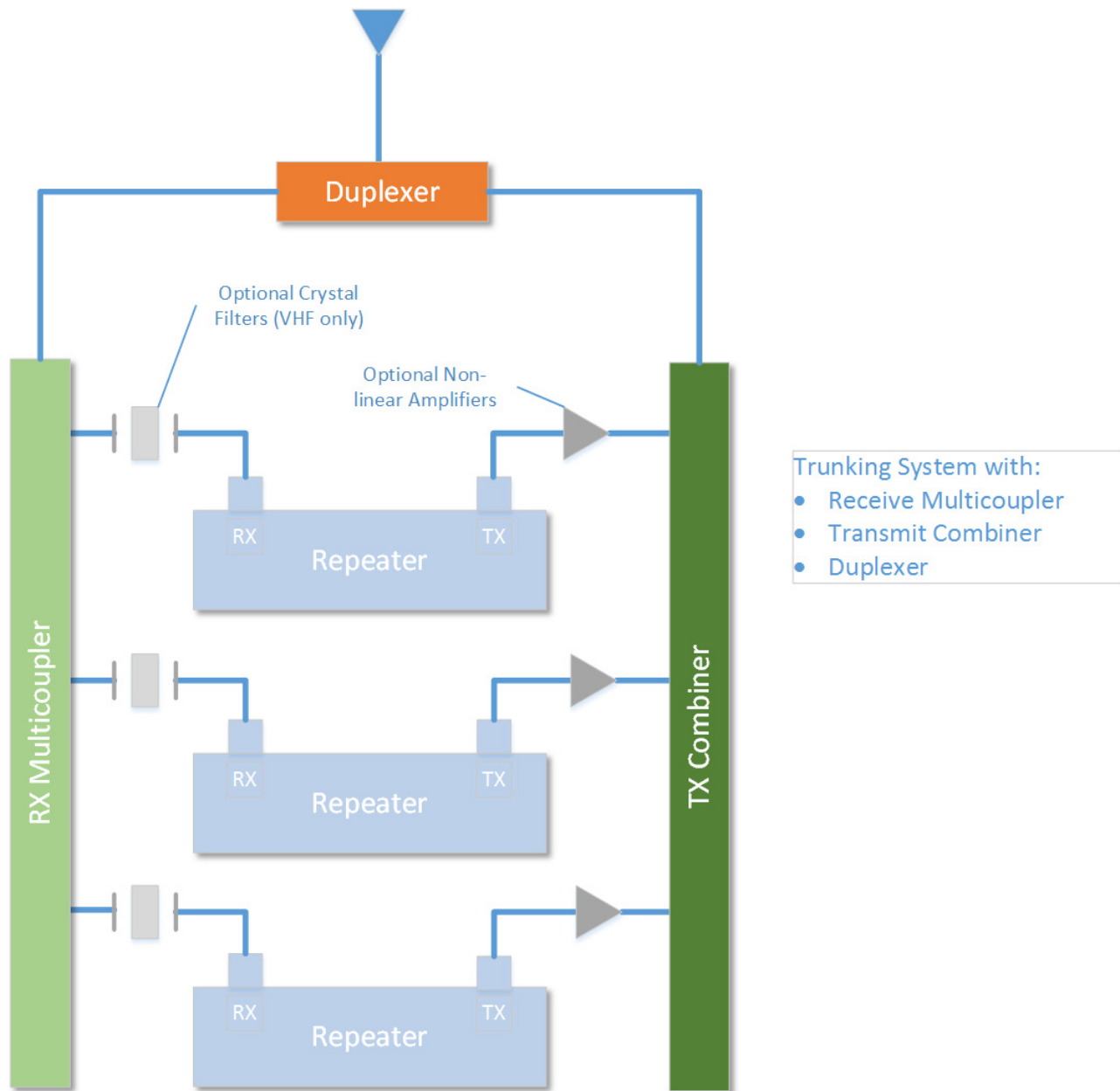
- The RX Multicoupler allows all the repeater's RX signals to use a single antenna.
- Each RX signal is at a different frequency. The Multicoupler filters each RX signal so that there is no interference at the antenna.

- The TX Combiner allows each of the repeater's TX signals to use a single antenna.
- The TX Combiner isolates each TX signal so that any transmitting signal does not feedback into any of the other repeater's transmitters.
- Filtering degrades power output greatly.

Applications

- This configuration is used for Trunking systems.
- Use where there is limited space on the tower.

Multiple Repeaters: One Antenna with Receive Multicoupler, Transmit Combiner and Duplexer



Characteristics:

- Each RX signal is at a different frequency. The Multicoupler filters each RX signal so that there is no interference at the antenna.
- The TX Combiner isolates each TX signal so that any transmitting signal does not feedback into any of the other repeater's transmitters.

- Filtering dramatically degrades power output.
- The Duplexer is filtered so that both RX and TX signals can share a single antenna.
- This configuration reduces redundant filtering components, but requires that the occupied frequency band for all TX and RX signals be fairly narrow.

Applications

- This configuration is used for trunking systems.
- Use where there is limited space on the tower.
- Use in a system where the losses from adding a Duplexer are not an issue.