



Using the RSP1 – Radio Spectrum Processor with your Transceiver as a Panadapter





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What is a Panadapter?



- “Panadapter is short for Panoramic Adapter. The simple answer is that it allows us to see a panoramic display of the band our radio is tuned to. We can see every signal”*.
- Early implementations used a PC soundcard to achieve this function but were therefore limited to 200 kHz of bandwidth because they rely on the sound card.
- The advent of affordable SDR hardware such as the RSP1 has allowed implementations with much greater bandwidth, and hence much more usefulness.
- The RSP (Radio Spectrum Processor) from SDRplay is a Software Defined Radio which can turn a PC into a general coverage receiver or spectrum analyser spanning Medium Wave (100KHz) through to Microwaves (2GHz).
- Combined with readily available, and capable, SDR software Panadapters are now an affordable and easy to implement reality!

* Definition courtesy KA9MOT <http://mypanadapter.com/>

Hardware Requirements



- An RSP1 – to acquire signals across the frequencies of interest.
- A Transceiver - preferably with either RxOut or IF Out capabilities, and CAT (Computer Aided Transceiver) capability to allow interaction with the SDR software.
- A PC – to run the SDR software and allow control signals to pass back and forth between the SDR software and the transceiver.



Antenna Considerations

- The RSP1 can share the same antenna as your transceiver, or in some situations you may prefer to use an entirely separate antenna.
- If a separate antenna is used care must be taken with the physical layout to ensure that near-field effects do not overload the RSP1 when you are transmitting from the transceiver.
 - See this article for a discussion of near-field effects: http://www.w8ji.com/antenna_coupling.htm
- If a shared antenna is used it may either be connected “behind” the transceiver, in which case internal circuitry in the transceiver will protect the RSP1, or using a splitter “in front of” the transceiver. If a splitter is used it is essential that a switch is implemented that isolates the RSP1 from the antenna during transmit!
- **In any configuration the maximum input power to the RSP1 must not exceed 0dBm**
- On the following slides we will look at these configurations in more detail

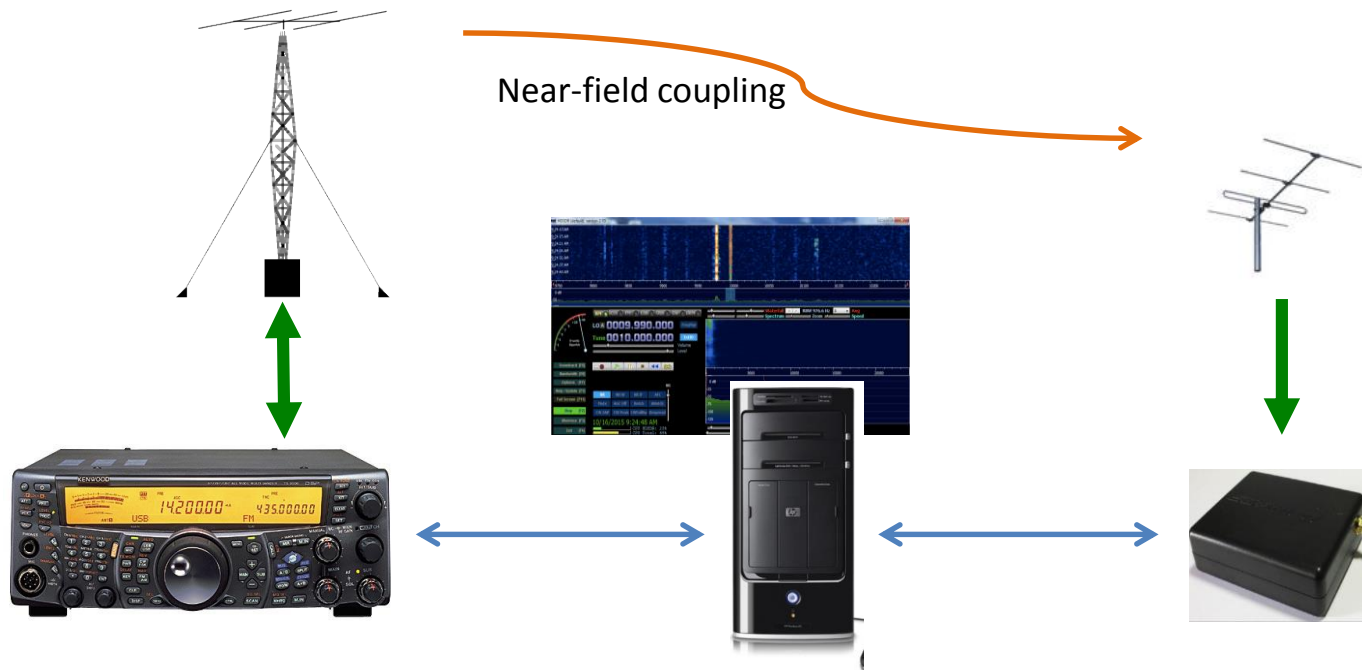
DO NOT directly connect the RSP to the same antenna as your transmitter, or to an antenna in the near field of a transmitting antenna, as this is likely to result in irreversible damage to your RSP and invalidate your warranty.

Antenna Considerations



Separate antenna

- Care must be taken with the physical layout to ensure that near-field effects do not overload the RSP1 when you are transmitting from the transceiver.
 - See this article for a discussion of near-field effects: http://www.w8ji.com/antenna_coupling.htm



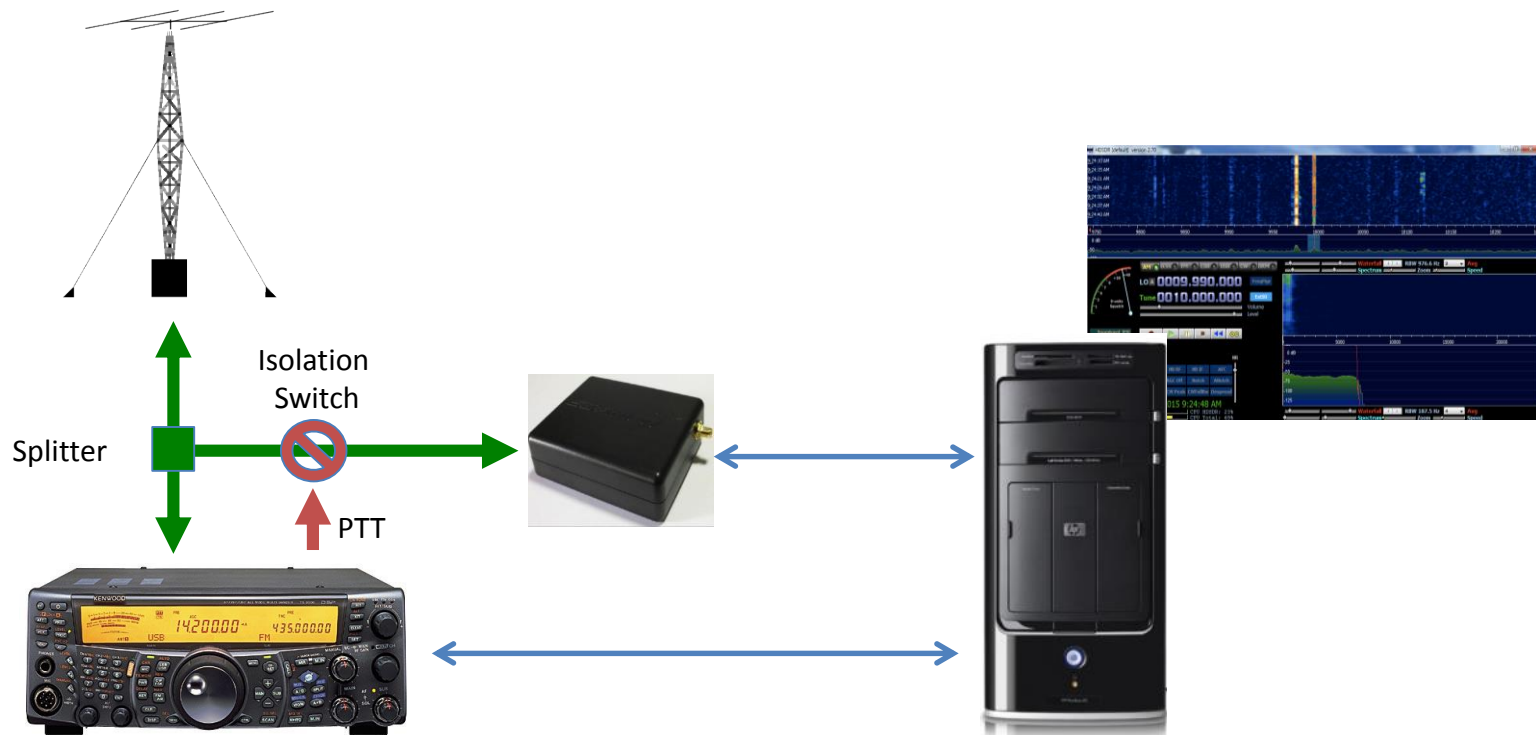
DO NOT directly connect the RSP to an antenna in the near field of a transmitting antenna, as this is likely to result in irreversible damage to your RSP and invalidate your warranty.

Antenna Considerations



Shared antenna using splitter

- A switch must be used to isolate the RSP 1 during transmit!



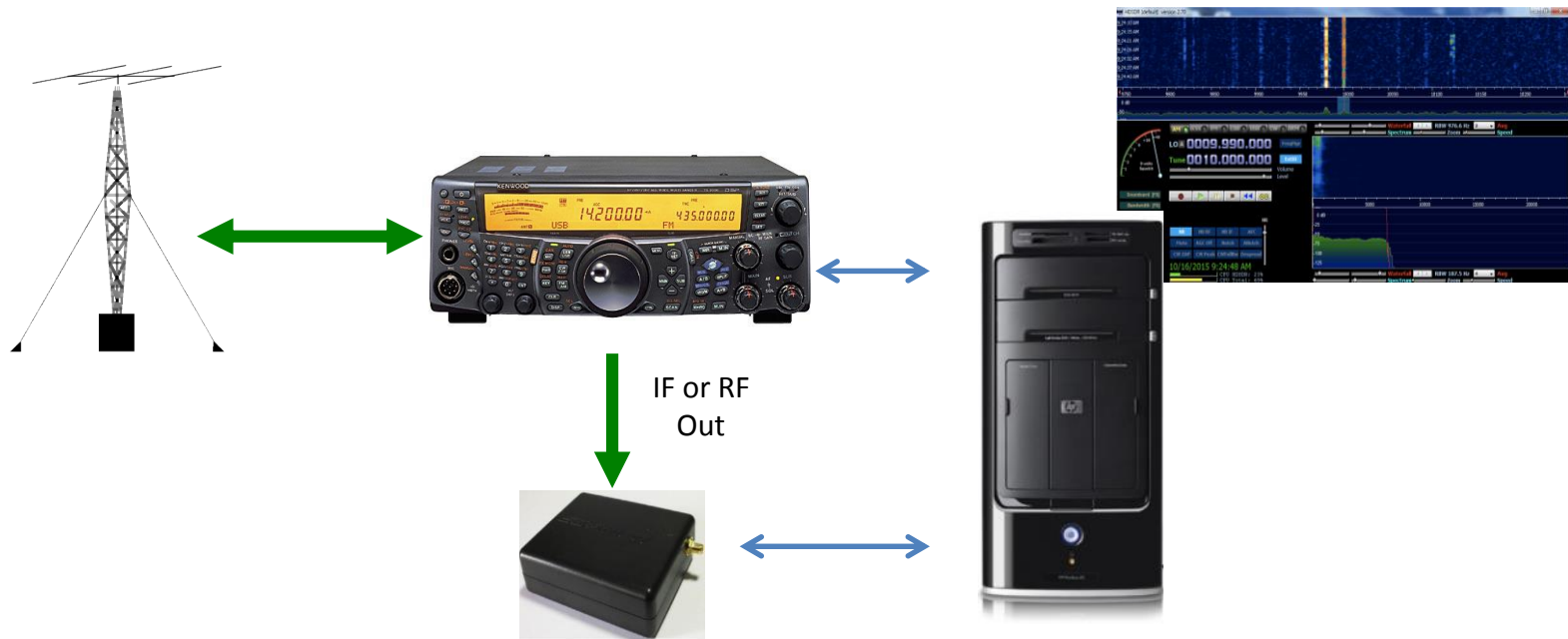
DO NOT directly connect the RSP to the same antenna as your transmitter as this is likely to result in irreversible damage to your RSP and invalidate your warranty.

Antenna Considerations



Shared antenna “behind” the transceiver

- Internal circuitry isolates the RSP1



IF Out: - Displayed bandwidth limited by transceiver on-board filters
 - RSP1 tuned to IF frequency

RF Out: - RSP1 can display up to the full 8MHz bandwidth capability

Software Requirements



- Any of the SDR Software programs that support RSP1 can be used to provide a basic spectrum display.
- HDSDR and SDR Console have built-in capabilities for CAT and other add-on software, to allow for communication between the SDR software and the transceiver.
- Ham Radio Deluxe and OmniRig are commonly used for advanced implementations.
- We recommend you research the available options and select according to your expectations and requirements:

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|-------------------|--|
| HDSDR: | www.hdsdr.de |
| SDR-Console: | www.sdr-radio.com |
| CubicSDR: | cubicsdr.com |
| Ham Radio Deluxe: | ham-radio-deluxe.com |
| OmniRig: | www.dxatlas.com/omnirig/ |
| N4PY: | http://www.n4py.com/ |

For more information:



- Company website: www.sdrplay.com
- Community Forums: www.sdrplay.com/community/
- Email: support@sdrplay.com
 - US customers: support-us@sdrplay.com
- Facebook: <https://www.facebook.com/groups/sdrplay/>
 - Independent group run by enthusiastic users!