

Interference hunting in TDD networks

Rohde & Schwarz portable receivers and direction finders

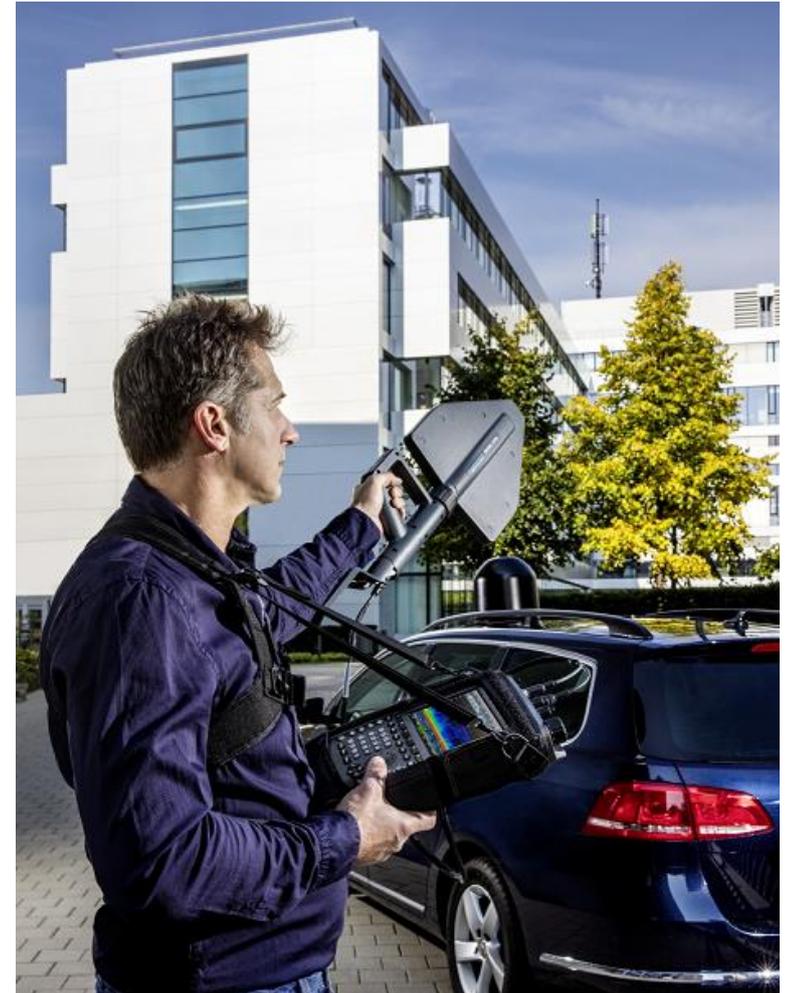
Challenge

- In time division duplex (TDD) networks such as TDD-LTE and 5G NR, the downlink (DL) and uplink (UL) use the same frequency band, meaning a single frequency band is divided into timeslots used by both DL and UL signals. When viewing such TDD signals on a conventional spectrum display, it is impossible to differentiate between the two signals or any unwanted signals present in the same spectrum. This makes interference hunting in TDD systems extremely difficult.

Solution

- Portable receivers from Rohde & Schwarz, such as R&S®PR100 and R&S®MNT100, as well as the R&S®DDF007 portable direction finder support a trace minimum hold function with adaptive detector that enables users to effectively suppress TDD signals and show persistent interferers on the spectrum display. This method is particularly useful in detecting and tracking a persistent interferer that is continuously present in the air.
- The portable devices also offer a polychrome display (option required) that allows user to visually separate two or more pulsing signals occupying the same frequency spectrum.

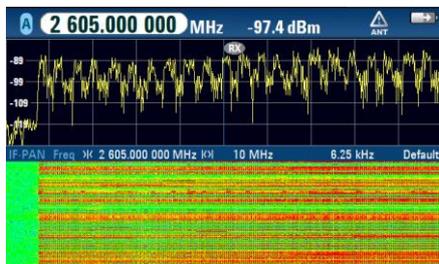
Your benefit	Features
Better visualization of persistent interferers on the spectrum and waterfall display	Trace minimum hold function makes use of negative FFT detector to measure and display the signal trace. The measurement time setting, which is equivalent to the time constant of the detector, allows the detector to adapt to the interferer with different signal duration.
Simultaneous monitoring of entire spectrum that includes TDD signals as well as interferers	The polychrome display allows the user to visualize both UL and DL signals as well as any unwanted transmission in the same spectrum. The user is able to perform interference hunting while remaining aware of the entire signal environment.



Setup overview

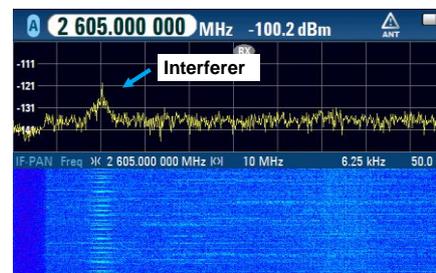


Typical setup: R&S®PR100 with R&S®HE400 portable directional antenna.

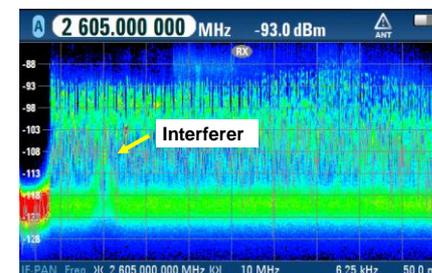


R&S®PR100 display: 10 MHz realtime spectrum and waterfall diagram of a partial TDD-LTE signal together with a relatively persistent interferer at 2602 MHz.

Trace minimum hold function and polychrome display

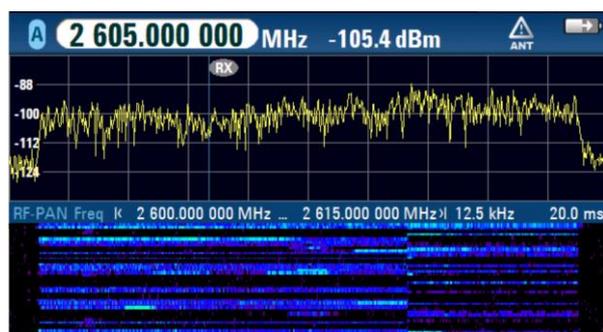


With the trace minimum hold function enabled, both DL and UL TDD signals are suppressed and a relatively persistent interferer at 2602 MHz can be easily identified.

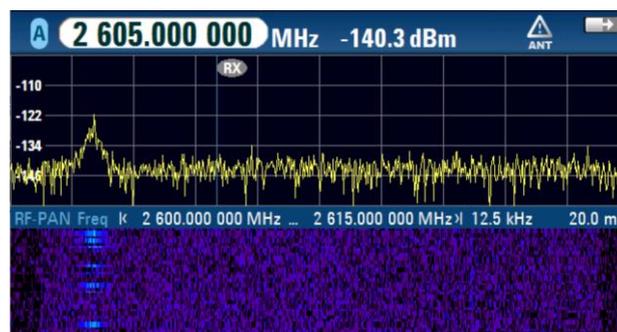


With the polychrome display, both TDD signals and interference at 2602 MHz can be visualized on a single display.

Trace minimum hold function in panorama scan (PSCAN)



PSCAN display of an entire TDD-LTE band (2600 MHz to 2615 MHz) with a relatively persistent interferer.



With the trace minimum hold function enabled, a relatively persistent interferer at 2602 MHz becomes obvious.

Instrument choices

Specification	R&S®PR100	R&S®DDF007	R&S®MNT100
Frequency range (receive)	9 kHz to 7.5 GHz	9 kHz to 7.5 GHz	600 MHz to 6 GHz
Important configuration			
Polychrome option	R&S®PR100-PC	R&S®DDF007-PC	Standard

► For more information, visit https://www.rohde-schwarz.com/IH-TDDnetworks_56279-661441.html

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