TEST AUTOMOTIVE RADAR INTERFERENCE MITIGATION

Automotive radar is vital to the advanced driver assistance systems (ADAS) that will help achieve Net Zero (zero accidents, zero fatalities) targets in the automobile industry. In a driving environment, radar sensors must detect real objects even when there is interference. The R&S®AREG800A automotive radar echo generator is essential to any solution that tests radar sensor immunity to interference.

Your task

To meet the tough Net Zero target for the automotive industry, radar sensors must accurately perceive the driving environment. Radar, lidar and cameras work together for sensor fusion. However, radar performs better in bad weather conditions and in the dark. Increasing the number of radar sensors improves perception of the environment but also increases the potential for radar-to-radar interference.

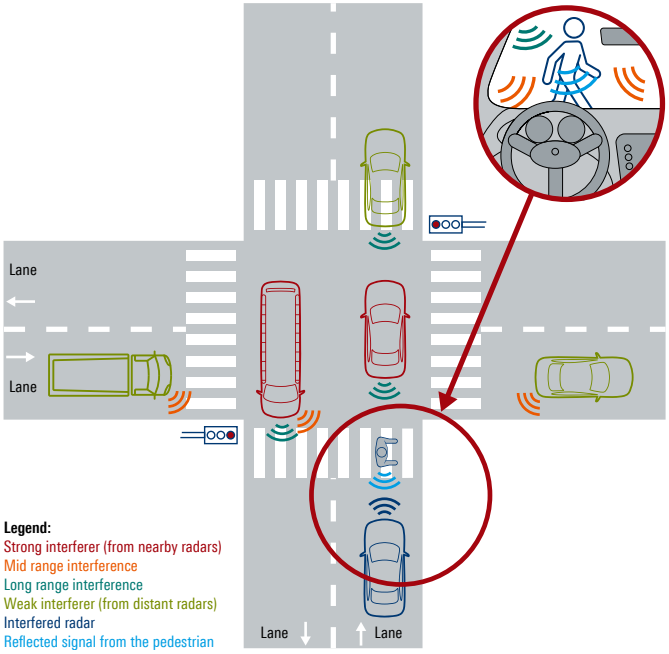
Strong interference can have an impact on reflections from targets and create unwanted effects, such as ghost targets, false alarms, increased noise floor and undetected objects. Radar systems need to be able to operate close to each other. This closeness is a critical performance issue and mitigating the resulting interference is as important as detection.

Rohde&Schwarz solution

Rohde&Schwarz has reliable and repeatable test solutions for ADAS and automated driving (AD). The R&S®AREG800A automotive radar echo generator is a unique solution for testing immunity of radar sensors against interference. The R&S®AREG800A is flexible and can generate multiple independent dynamic targets and inject interference signals into a radar's field of view.

By providing input interfaces in the IF domain, the R&S®AREG800A together with the R&S®SMW200A vector signal generator can simulate a wide range of interferers. The generated interference is superimposed onto the echo signals and upconverted into the RF domain with the R&S®AREG800A frontend.

Fig. 1: Typical automotive road scenario



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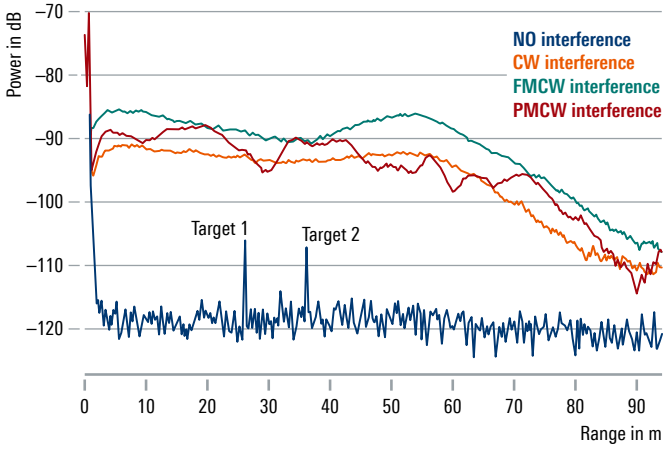
Make ideas real

Together with R&S®Pulse Sequencer software, the R&S®AREG800A and R&S®SMW200A define a reference test setup that analyzes and tests radar sensor interference mitigation. The R&S®Pulse Sequencer is a user friendly software program for designing and calculating interference signals, such as FMCW and PMCW sequences.

Fig. 2: Automotive radar interference test



Application

Figure 2 shows the behavior of a radar sensor when different types of interference signals such as CW, FMCW and PMCW are present. When strong interference dramatically increases noise levels in a radar sensor, automotive radars cannot detect targets. The example illustrates the importance of radar sensor resilience and why testing and validation are essential.

Summary

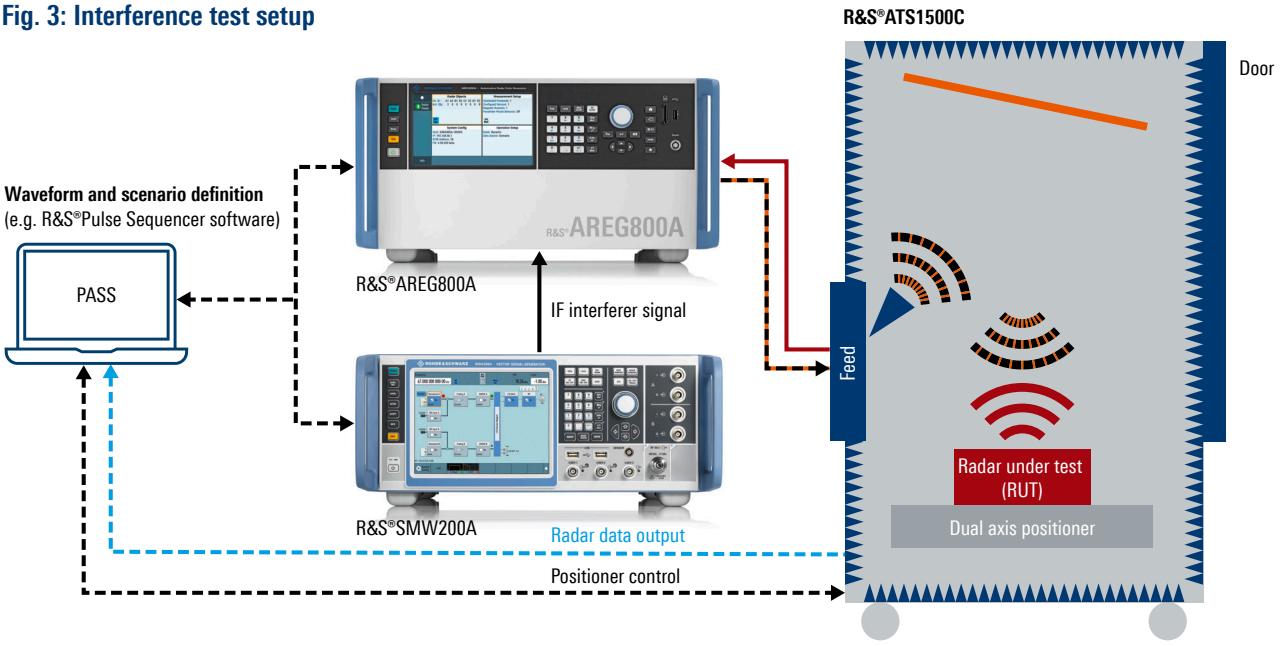
Benefit from the extensive Rohde&Schwarz portfolio of reliable automotive radar test solutions:

- Test radar sensor resilience to interferers in all automotive radar bands
- Highly reliable all-in-one test solution with high repeatability
- Cost efficient since 6 GHz signal source is sufficient for interferer simulation in the E band
- Interfering signals can be synchronized with the radar sensor
- Simulate advanced interference scenarios, including sophisticated waveforms, such as PMCW and OFDM

See also

www.rohde-schwarz.com/product/areg800a

Fig. 3: Interference test setup



Ordering info

Designation	Type	Order No.
Automotive radar echo generator	R&S®AREG800A	1437.4400.02
Vector signal generator	R&S®SMW200A	1412.0000.02
Anechoic chamber	R&S®ATS1500C	1537.9777.02

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