DATA SHEET

E8708A Radar Target Simulator

76 GHz to 81 GHz

Introduction

Radar, lidar, and cameras, these are some of the sensing technologies that is driving today's market for Advance Driver Assistance Systems (ADAS), as we move into the future of autonomous vehicles. The demand keeps growing, with more investments into development and manufacture of the latest sensing technologies to fit all transport methods. For radar, the technology has narrowed down to the use of 77 GHz for the far range radar, and 79 GHz for the short to medium range radar, replacing the 24 GHz radar. May it be in emergency braking systems, adaptive cruise control or forward/rear collision warning, without a doubt, the radar sensor serves to ensure a safer drive for passengers and road users alike.

The safety nature of automotive radars translates to a fast, accurate and reliable test solution for product test teams, regardless if they are in manufacturing or design verification. A purpose-built tool that will accurately and repeatedly simulate targets to test radar units, and to take it further, with features that will help to provide further measured insight while simulating the targets. This is what the Keysight E8708A offers, simple and straightforward target simulation, with a robust design that covers both 77 GHz and 79 GHz radar units.

Product Description

Enhanced to cover from 76 GHz to 81 GH, the latest generation E8708A Radar Target Simulator (RTS) is separately optimized from 76 GHz to 77 GHz and 77 GHz to 81 GHz, with newly added features to enhance usability. The E8708A is offered with full simulation range from 4m to 300m; or in fixed ranges defined by customers, helping to scale the price vs usage model for customers.

A newly added in-built signal analyzer option, enhances the usability for customers, allowing average power and occupied bandwidth measurements to be done within the same box. Configurations requiring Doppler no longer requires an external signal generator, instead, it is now an in-built option within the RTS. The E8708A is available in either dual-horn - Tx and Rx, or a single horn configuration with built-in circulator.

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Solution Diagram

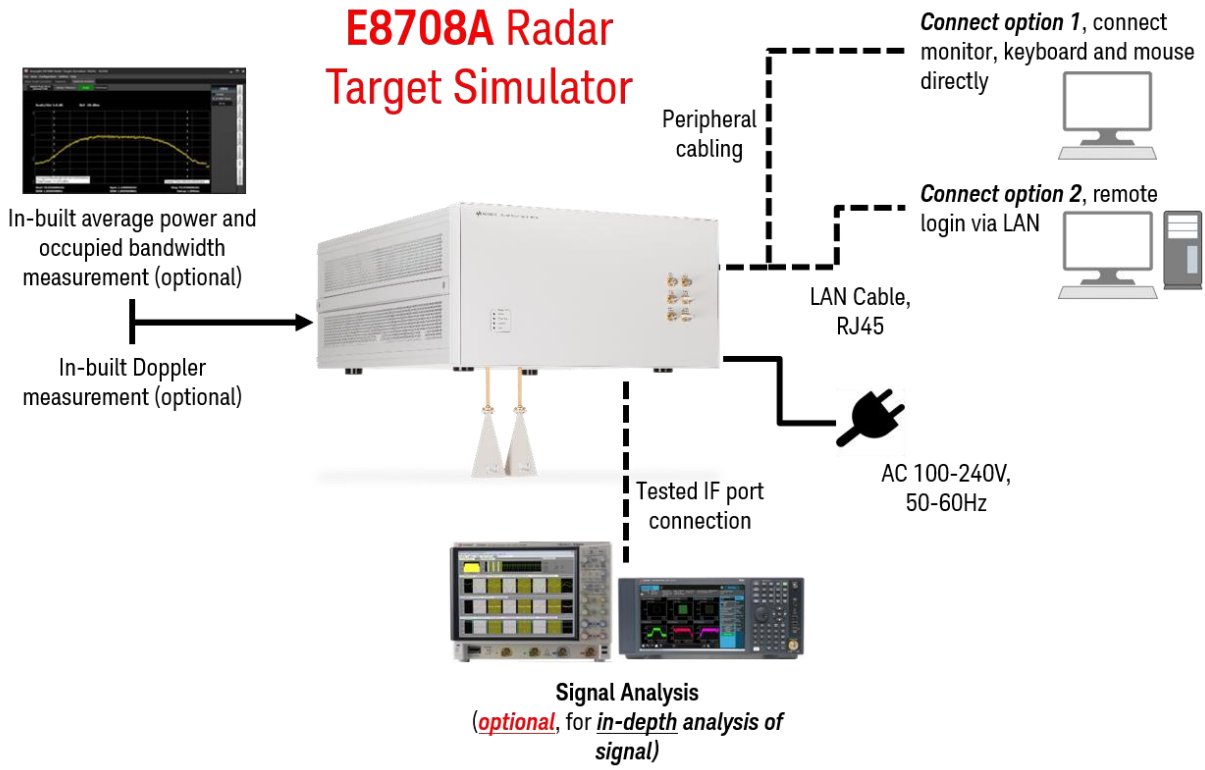

Figure 1: Solution diagram for E8708A

The base E8708A system will provide simulation of both range and radar cross section. Signal analyzer and Doppler simulation features are optional. Figure 1 (above) described the solution in more detail together with the connection method.

A minimum physical distance of 1m between the E8708A RTS and the device-under-test (DUT), helps to reduce valuable manufacturing floor space, Figure 2 (below).

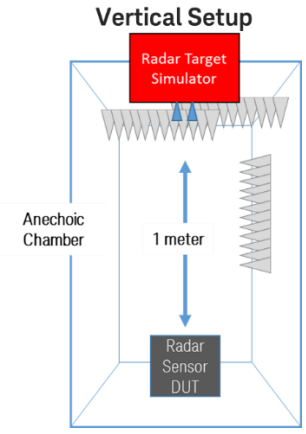

Figure 2: Example setup with anechoic chamber

Specifications and Features

RF Range	
Frequency range	76 to 81 GHz
Instantaneous Bandwidth	76 to 77 GHz (1GHz) 77 to 81 GHz (4 GHz)
Input Power	
Max. input power (at RF flange)	0 dBm
Min. input power (at RF flange)	-65 dBm
Recommended input power (at RF flange)	-20 dBm
Target Distance Simulation	
Min. physical distance, RTS to DUT	1 m
Min. simulated target distance	1 m (physical) + 3 m (simulated)
Max. simulated target distance	300 m
Distance simulation resolution	0.1 m
Distance simulation accuracy	+ / - 0.3 m
Radar Cross Section Simulation (RCS) and Other RF Performance Specifications	
RCS @ -20dBm Input Power with 25 dBi antenna	4 m: -32dBsm to 29dBsm (typical)
	300 m: 43dBsm to 104dBsm (typical)
Spurious Emission	-35 dBc
Phase Noise	-90 dBc/Hz @10 kHz
(Optional) Target Speed Simulation	
Doppler simulation range	- 360 km/h to 360 km/h
Doppler simulation resolution	0.1 km/h
Doppler simulation accuracy	+ / - 0.05 km/h

Additional features

- IF port for frequency analysis – SMA
- (Optional) Dual or single horn configuration (20 or 25 dBi gain)
- (Optional) In-built Occupied Bandwidth and Average Power measurement
- (Optional) Alignment Laser, Class 2 Laser, 635nm, max output power 1mW

General & Environmental	
System dimension (H x W x D)	222 mm x 574 mm x 425 mm
Chassis	Standard EIA 5RU height
System weight	26 kg
Operating temperature range	0 to +55˚C
Operating humidity range, temperature	50% to 95%, 40˚C
Storage and transportation temperature range	-40 to +70˚C
Software and Operation	
Embedded operating system	Windows 7 Professional 64-bit
Included hardware drivers	No driver is required, GUI is provided
Programming interface	API (provided)

Ordering Information

Option	Description	Remarks
Range Options		**ONE selection required**
E8708A-D01	Radar Target Simulator Full Delay Module	Configures RTS to simulate from 4m to 300m, no limitation
E8708A-D02	Radar Target Simulator with 2 fixed delay range	Configures RTS for 2 fixed distance, as defined by customers Note: Range cannot be changed
E8708A-D03	Radar Target Simulator with 3 fixed delay range	Configures RTS for 3 fixed distance, as defined by customers Note: Range cannot be changed
E8708A-D04	Radar Target Simulator with 4 fixed delay range	Configures RTS for 4 fixed distance, as defined by customers Note: Range cannot be changed
Feature Options		
E8708A-DPP	Doppler Feature Built-In	Add built-in signal generator, enable Doppler simulation of relative speed
E8708A-OBW	Radar Device Occupied Bandwidth Measurement Feature	Add built-in signal analyzer to enable RTS to make average power and occupied bandwidth measurements
E8708A-LAS	Positioning Laser Installed into Radar Target Simulator	Add built-in position laser
Antenna Options		**ONE selection required**
E8708A-H01	Radar Test System with Single Horn Antenna (25 dBi)	Configures RTS to have a single horn antenna, inclusive of circulator
E8708A-H02	Radar Test System with Dual Horn Antenna (25 dBi)	Configures RTS to have a dual horn antenna, receive and transmit
E8708A-H03	Radar Test System with Single Horn Antenna (20 dBi)	Configures RTS to have a single horn antenna, inclusive of circulator
E8708A-H04	Radar Test System with Dual Horn Antenna (20 dBi)	Configures RTS to have a dual horn antenna, receive and transmit
Calibration and Report		
E8708A-UK6	Commercial Calibration Certificate with test data	Include a printed copy of the published test results

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