TARGET SIMULATOR FOR BEAMFORMING RADAR

UTS's target Simulator for Beamforming Radar is developed to overcome the complexities involved in multi-channel RF modules of Phased Array followed by digital acquisition and beam forming algorithms. The validation of total DBF system is also important as the testability and observability gets considerably reduced after integration with antenna array. The product is referred as environment simulator, reflecting its features of 3D simulation of targets, jammers and clutter environment.

The modes of this simulator and associated applications are described below:

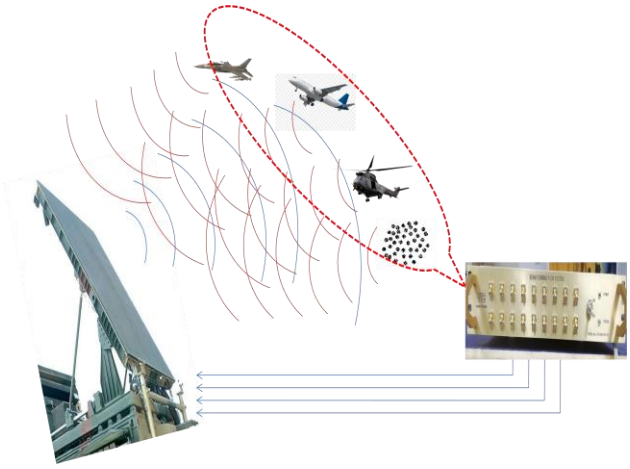
1. Data Level Simulator:

The data level simulator mode of UTS-Target Simulator, can model the parameters of RADAR and also multi target environment to offer data streams over multi Gigabit Ethernet/optical lines. This data level simulation can be taken by digital beam forming system of Device Under Test (DUT) for test and validation against different receive echo and jamming signal conditions.

Parameters modeled in this simulator are Phased array antenna elements, sub array elements, TR modules, up/down converters, gain at various stages, ADC performance, Multiple Target in 3D each with different parameters, Jammers on-board and off-board, Clutter effects etc..

2. Signal Level Simulator:

Phased Array Target Signal Level Simulator can provide signal outcome of echo for multi target environment at RF / IF. By using these RF signals of simulator, System Under Test (SUT) can directly get the channel data to the TR modules in the absence of antenna system facilitating the validation of TR module performance. By using these IF signals of simulator, System Under Test (SUT) can directly get the channel data to the Digital modules in the absence of TR modules for the validation of IF level Digital sub system performance.



Key Features:

a) Frequency range : L/S/C/X/Ku bands
b) Maximum Instantaneous Bandwidth: 20 MHz/50 MHz/200 MHz
c) Maximum number of targets / reflectors : 8 (Extendable)
d) Maximum false targets: 8 (Extendable)
e) Range: 300 m - 150 Km (Extendable to 1500Km)
f) Range resolution – 1/5/15 meters
g) User friendly GUI (with optional maps feature)
h) Can model RF parameters of RADAR systems
i) Configurable RCS for targets with swerling models
j) Programmable clutter models-Ground, Sea & Volume
k) Configurable target models-Point, Multi-Point Scatter, Jet Engine Modulation, Helicopter Blade Modulation, RCS variation
l) User can make the RADAR system to be static or moving type
m) Programmable Target speeds (Doppler shift based on relative motion)

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