Features

- 24 GHz to 30 GHz Frequency Range
- 8 x 8, 64 Element Dual Polarization
- Featuring 16 Otava Inc OTBF103 24-40 GHz Beamforming ICs
- Transmit and Receive Array
- +/- 45 degrees, Azimuth Scan
- +/- 15 degrees, Elevation Scan
- EIRP: +45 dBm
- Power Supply, Vin = 16 V
- Control Interface: USB
- GUI for full beam steering and sensor reporting
- 6.5 in x 13.5 in x 4.5 in (includes heatsink)

Description

The OTPM101 is a 2D 64-element active antenna array that provides azimuth and elevation steering with full amplitude and phase control for each antenna element. The array contains the Otava Inc beamformers, 64 vertical and 64 horizontal antenna elements, power optimization and thermal reporting, digital control, and RF feeds. At the backside of the module box, four SMA ports for transmit and receiver, each with H and V outputs, are available for further ease of connections to receiver and transmitter chains.

An AMD-Xilinx Zynq controller resides in this box enabling direct access to the beamformer chipsets to control the device configuration through serial port interface (SPI). The controller's direct access to variable phase and gain delay enables the steering of the beams. Built-in memory residing inside the beamforming chip allows storing and easy access of multiple phase and gain weights.
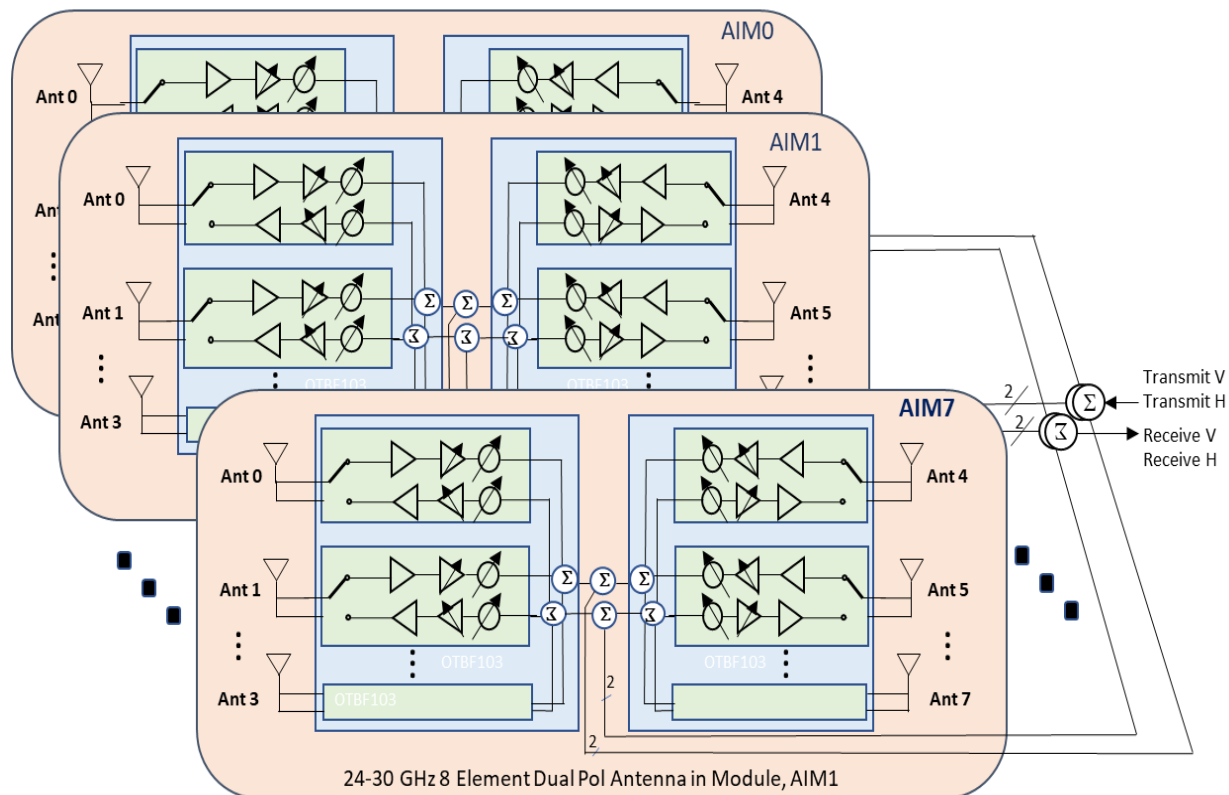

Applications

- n257, n258, n261 5G NR small cell, SATCOM, EW
- Pairs with Avnet AES-ZU208-DTRX2-SK-G, Wideband Millimeter Wave Radio Development Kit for RFSoC Gen3

OTPM101
64 Element Array Functional Diagram:

24-30 GHz 8 Element Dual Pol Antenna in Module, AIM1

The detailed array architecture as shown in the function diagram is designed by scaling multiple line array configuration of 8 antenna in modules (AIMs). Each AIM is a self-contained 8-element line antenna array, transmit and receive vertical and horizontal scan inputs/outputs and with SPI interfaces. The AIMs are then grouped at an optimum spacing to form an 8 x 8 array of dual linear polarization pairs. The AIMS' outputs are then summed/split via a combiner board to collapse the AIM7-0 transmit and receive I/Os into 4 I/Os, namely Transmit V, Transmit H, Receive V, and Receive H.

The combiner board also houses the AMD-Xilinx ZynQ 7000 FPGA for the control and operation of the whole phased array system.

A built-in graphical user interface (GUI) is available with this device for access of the controller built-in control of the PAAM. The controller registers include the gain and phase control of each of the elements. RAM memory is integrated within each beamformer IC to enable fast beam switching up to 64 states. This way, calibrated beam weights can be recalled directly from memory instead of programming through the GUI.

A custom radome is installed in front of the array to provide low insertion loss performance over the required frequency range and beam scan angular parameters.

Please contact: sales@otavainc.com for more information.