

# PRM2142X Perspectus mmWave Module

## PRODUCT BRIEF

### OVERVIEW

The PRM2142X is a member of the Perspectus module series which provide a complete USB 3.0 to 802.11ad solution with advanced features for long range, outdoor applications. It utilizes the Peraso X720 802.11ad 60 GHz phased array chipset which includes a baseband processor and a high-power mmWave beamforming transceiver RFIC.

The PRM2142X incorporates a 32-element phased array antenna. This antenna is integrated into the PCB and provides uniform performance over the entire 802.11ad band from 57 to 71 GHz.

The Baseband processor is the PRS4601-B2E. This provides all MAC and PHY layer functionality necessary for 802.11ad operation and supports point-to-point or point-to-multipoint capability.

The PRS1165 RFIC provides 16 RF chains with high transmit power levels. It supports all 6 of the 802.11ad defined channels.

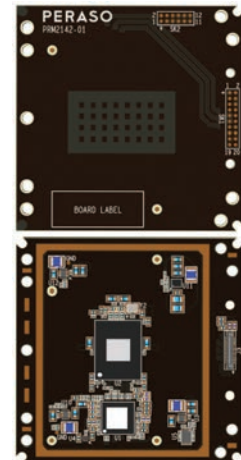


Figure 1: PRM2142X

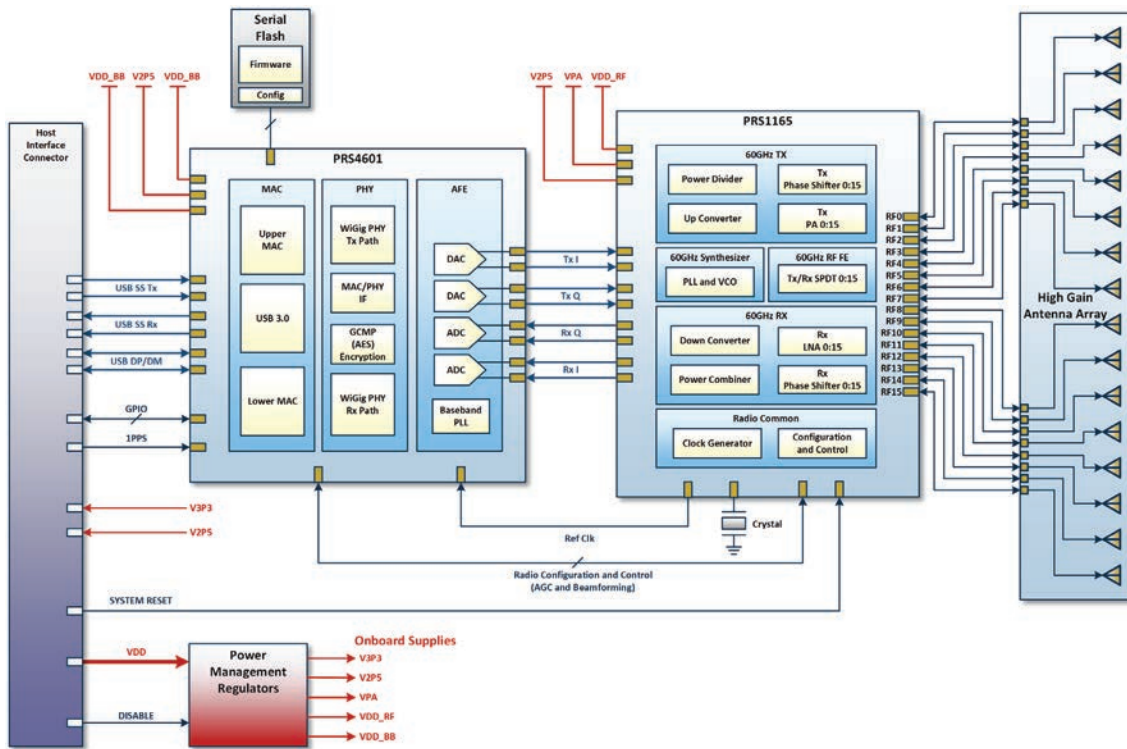
### TARGET APPLICATIONS

- Point-to-multipoint Fixed Wireless Access Networks
- Point-to-Point Backhaul / Fiber alternative

### FEATURES

- Operates in the unlicensed 57 to 71 GHz band
- 2.16 GHz and 1.08 GHz channel bandwidth
- pi/2-BPSK, pi/2-QPSK modulation support
- Fully integrated MAC, PHY, radio, and antenna
- 802.11ad MAC and PHY compliance
- Automatic rate adaptation
- Dynamic beamforming
- Automatic calibrations
- AES 128 bit data encryption
- WPA3 Authentication
- 1PPS synchronization support
- A- MSDU, A-MPDU data aggregation
- Peraso Directional Beam Scan and Connect (DBSC) for establishing long-range PtP links
- USB 3.0 data and control interface
- Integrated power management
- 16-element integrated phased array antenna
- -89dBm receive sensitivity @MCS4
- 2Gbps maximum data rate
- 42 dBm EIRP with 16-elements active
- Total system DC power:
  - Tx: 13W (at QPSK, 16 elements active)
  - Rx: 5W (at QPSK, 16 elements active)
- -40°C to 85°C operation
- Single 5V power supply input
- Compact 50mm x 50mm form factor

## BLOCK DIAGRAM



## KEY SPECIFICATIONS

Parameter	Value	Conditions	Value (Typ.)	Units
Data Interface	USB3.0			
Air Protocol	802.11ad			
Modulation Schemes	MCS0-9 (pi/2-BPSK, pi/2-QPSK)			
Multiple Access Modes	CBAP, proprietary Long Range CBAP and Controlled Access protocols			
Security Modes	128-bit AES WPA3			
Networking Support	infrastructure , peer-to-peer, standard WLAN, point-to-multipoint			
RF Frequency			57 to 71	GHz
Channel bandwidth	802.11ad Channels 1-6		2.16	GHz
Module size	Length x Width		50 x 50	mm
Operating Temperature Range			-40 to 85	°C
<b>TX Parameters</b>				
EIRP	Tamb=25°C, Channel 4, MCS9		42	dBm
<b>RX Parameters</b>				
Sensitivity	Tamb=25°C, Channel 4, MCS4		-89	dBm
<b>Beam Forming Parameters</b>				
Azimuth Scan Range	-3dB edge, Channel 4		+/-45	deg
Elevation Scan Range	-3dB edge, Channel 4		+/-25	deg
<b>DC Power Consumption</b>				
TX DC Power	16 RF chains. 100% duty cycle.		13	W
RX DC power			5	W

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