Overview

The EVK-PRM2136X is an evaluation kit for the PRM2136X module with advanced features for 60GHz mmWave data networks. The Evaluation Kit consists of the PRM2136X module, the PER6133 adapter board, and a heatsink.

The PRM2136X utilizes the Peraso X130 802.11ad 60 GHz phased array chipset which includes a baseband processor and a mmWave beamforming transceiver RFIC. It incorporates dual-polarization phased array antenna with 8 elements per polarization. The antenna is integrated into the PCB and provides uniform performance over the 57 to 66 GHz band.

The Baseband processor is the PRS4601-B2E. This provides all MAC and PHY layer functionality necessary for 802.11ad network operation and is compliant with the Wi-Fi Alliance "WiGig" requirements. The PRS1145 RFIC provides 8 RF chains with 16 antenna ports supporting antenna diversity. It supports all 4 of the 802.11ad defined channels.

The PER6133 functions as a wireless device adapter supporting a USB-C connector.

Software drivers are provided to support Linux and Windows platforms.

Features

- 57 to 66GHz operation
- Dual-polarization PCB integrated antenna
- 31 dBm EIRP with 8-elements active
- Total system DC power

    Tx 3.2W

    Rx 2.9W

- Automatic rate adaptation
- Dynamic beamforming
- Automatic calibrations
- Integrated power management

- 802.11ad MAC and PHY compliance
- -84dBm receive sensitivity @MCS1
- 3Gbps maximum data rate
- π/2-BPSK, π/2-QPSK and π/2 16-QAM modulation support
- AES 128 bit data encryption
- A- MSDU, A-MPDU data aggregation
- Integrated power management
- Linux and Windows 10 drivers

Evaluation Kit Components

The EVK-PRM2136X includes:

1) PRM2136X module
2) PER6133 adaptor board with a USB-C interface
3) Heatsink
4) Plastic Case
5) USB-A to USB-C cable
6) Tripod

Applications

- Multi-gigabit Wi-Fi networking
- Wireless Virtual Reality
- High speed point-to-point data transfer
- Mobile "sync-and-go"
- In-room wireless display (including full HD/4K video streaming and secondary display)
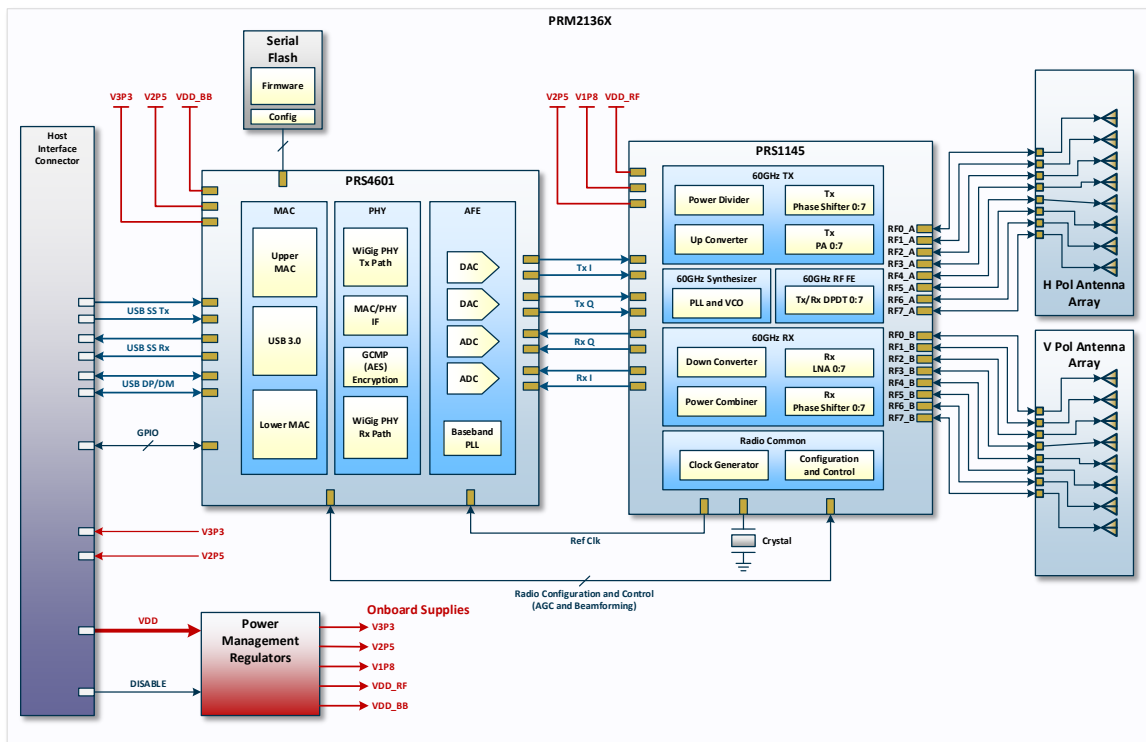- Wireless docking and I/O

Block Diagrams

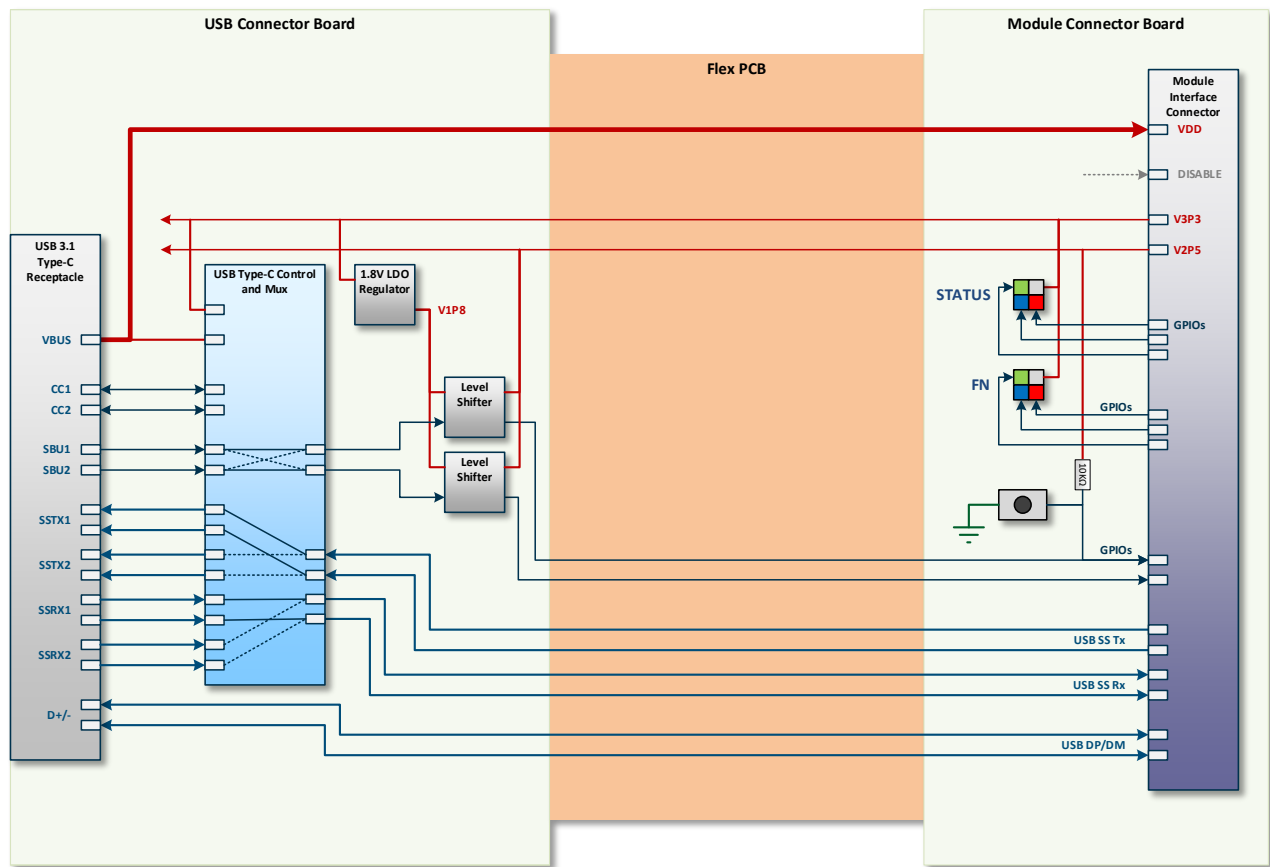**Figure 1: Functional Block Diagram of the PRM2136X module**

Figure 2: Block diagram of the PER6133 adaptor board with USB-C connector

Key Specifications

Unless otherwise noted, all specifications are at 25 °C. Please refer the PRM2136X datasheet for complete performance specifications.

Table 1 gives the DC power consumption as a stand-alone antenna. Table 1 gives the DC power consumption when configured for use with a dish reflector antenna.

Table 1: DC power consumption

Parameter/Pin	Description	Conditions	Min	Typ	Max	Units
Tx DC Power Consumption				3.2		W
Rx DC Power Consumption				2.9		W

Connectors

The interface to the EVK-PRM2136X is through a USB-C connector. This connection is provided through the PER6133 adapter board to facilitate testing and evaluation of the PRM2141X module.

Power is provided via the USB-C connector.

Antenna

The antenna of the PRM2136X is a PCB integrated antenna. This antenna is made up of two sub antennas, one that is vertically polarized, and one that is horizontally polarized. Refer to Figure 3.

The antenna is designed with 16 elements, and is capable of beamforming in both the elevation and azimuth axes. Refer to the PRM2136X datasheet for more details regarding antenna performance.
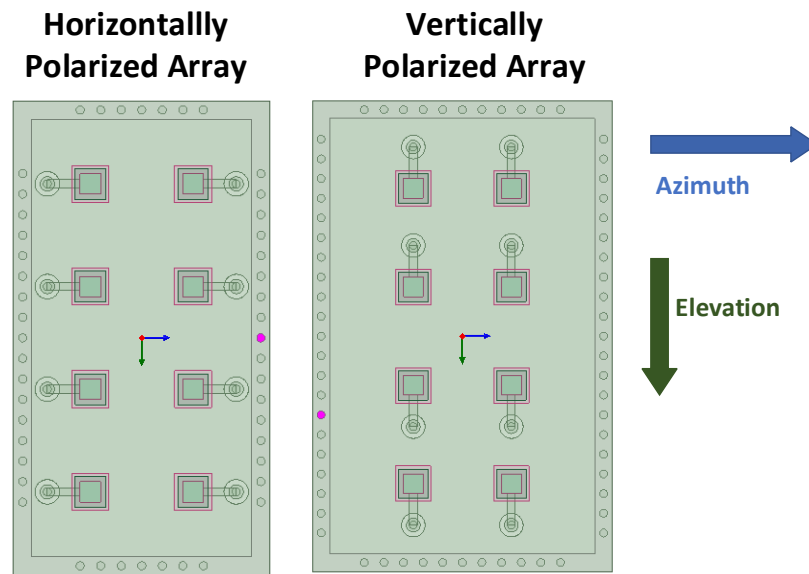

Figure 3: Diagram of the PRM2136X 8+8 dual-polarization antenna

Mechanical Specifications

The EVK-PRM2136X consists of two PCBs, the PRM2136X and the PER6133. The PRM2136X is the module that provides all of the functionality. The PER6133 is an adapter board that allows connection through a standard USB-C port.

The PER6133 consists of 3 sections. A rigid section that connects to the PRM2136X, a flexible section, and another rigid section with the USB-C connector. This allows the adapter board to "wrap" underneath the heatsink. Figure 4 shows mechanical drawing of the PRM2136X module with dimensions. Figure 5 shows the adaptor board with the flexible PCB portion, with dimensions. Figure 6 shows the heatsink assembly.
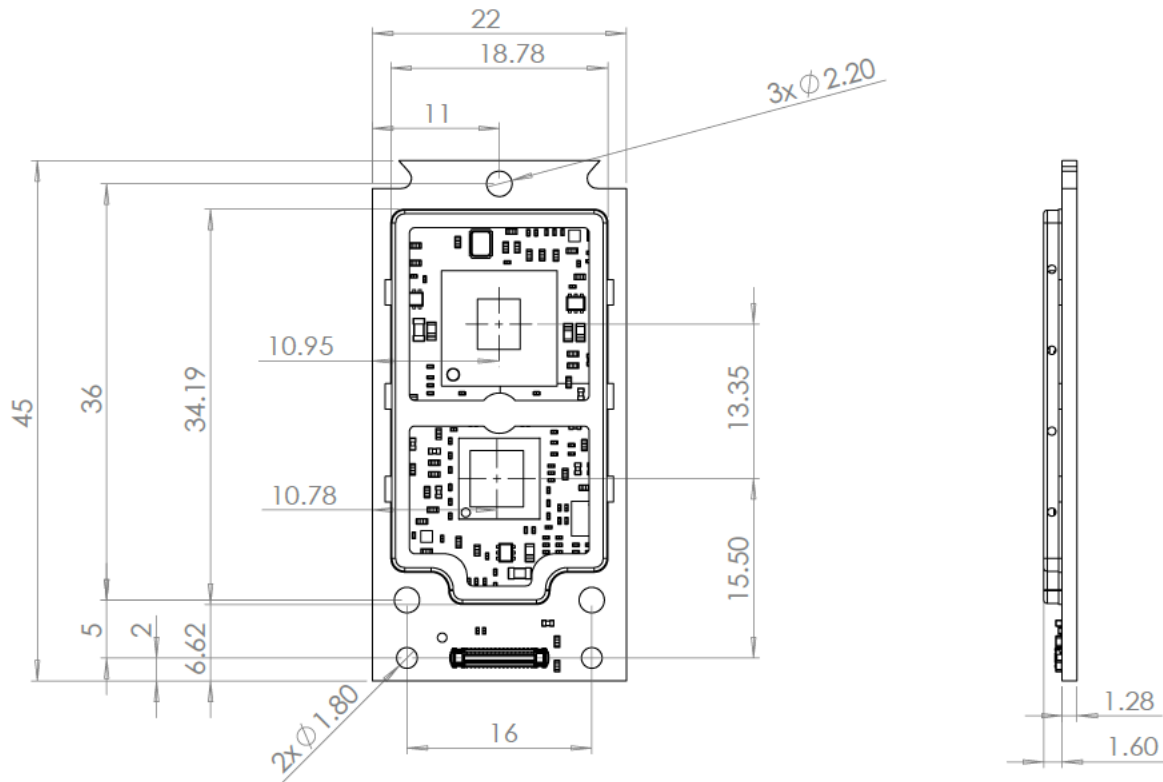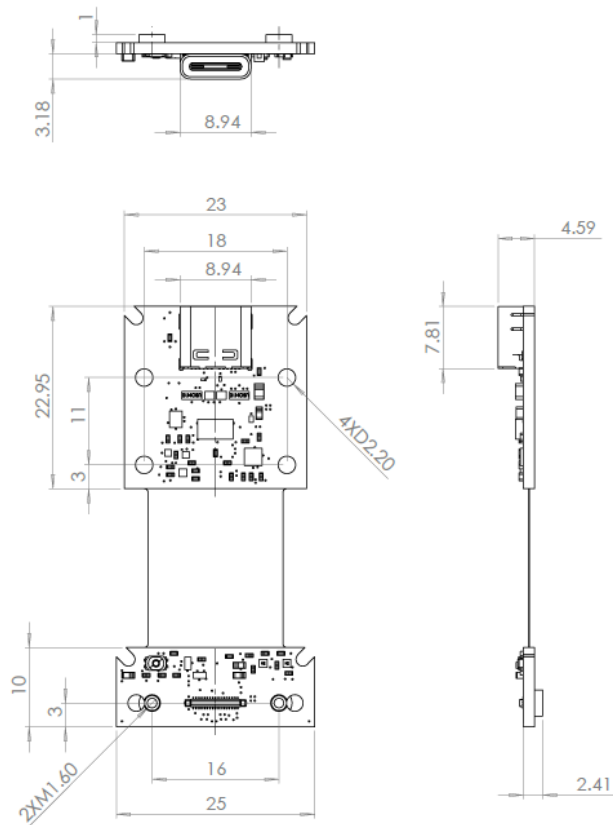
Figure 4: PRM2136X-D-CGN with dimensions

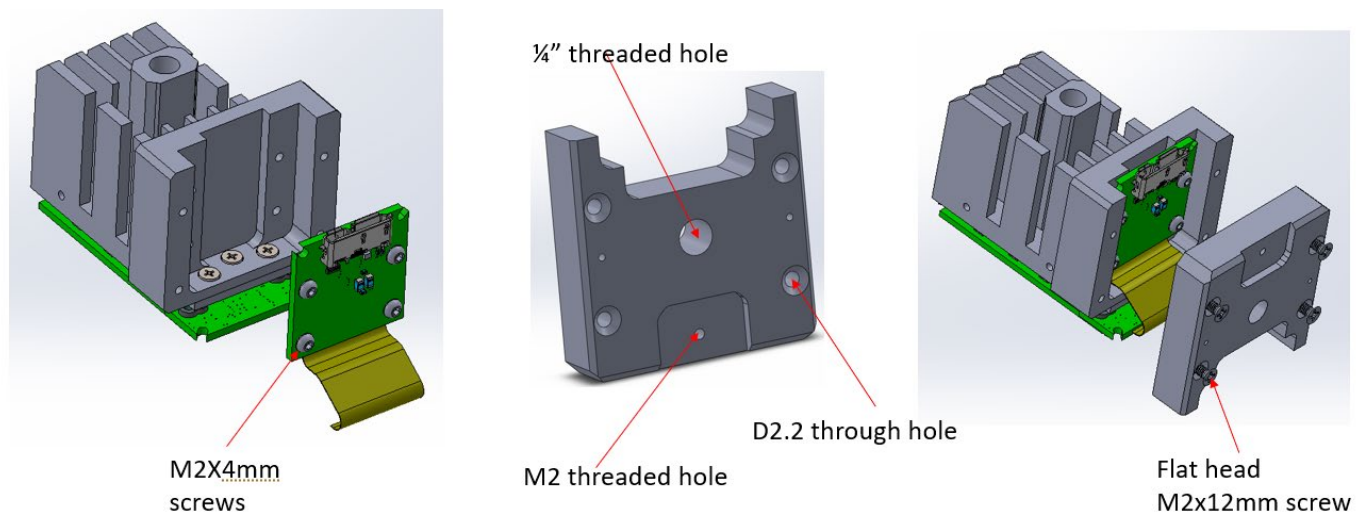**Figure 5: PER6133 adapter board with dimensions**

Figure 6: Heatsink assembly

Ordering Information

Part #: EVK2136X-D-CSUC

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