# MWC-740 Data Sheet -Preliminary

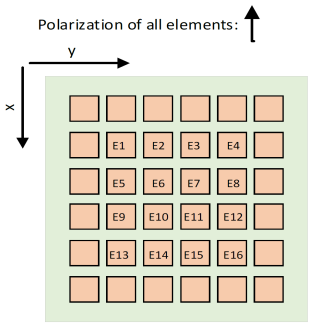
*Revision 0.8.2107*

13 August 2021

# 1. Introduction

## 1.1 Summary

The MWC-740 is a complete USB 3.0 to WiGig module 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 MWC-740 incorporates a 16-element phased array antenna. The antenna is integrated into the PCB and provides uniform performance over the entire WiGig 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 WiGig defined channels.

## 1.2 Features

- 57 to 71GHz operation
- 16-element PCB integrated antenna
- 38 dBm EIRP with 16-elements active
  (higher gains supported using a dish reflector)
- Total system DC power
  - Tx 13W (at QPSK, 16 elements active)
  - Rx 5W (at QPSK, 16 elements active)
  - Tx 6.8W (at QPSK, 4 elements active)
  - Rx 4.7W (at QPSK, 4 elements active)
- Automatic rate adaptation
- Dynamic beamforming
- Automatic calibrations
- 13 channels from 0.5 to 6.5
- ½-Channel, Full-Channel BW
- Integrated power management
- 802.11ad MAC and PHY compliance
- -72dBm receive sensitivity @MCS1
- 2Gbps maximum data rate
- pi/2-BPSK, p/2-QPSK modulation support
- AES 128 bit data encryption
- Directional Beam Scan and Connect (DBSC) for establishing long-range PtP links
- 1PPS synchronization support
- A- MSDU, A-MPDU data aggregation

# 2. Receive Specifications

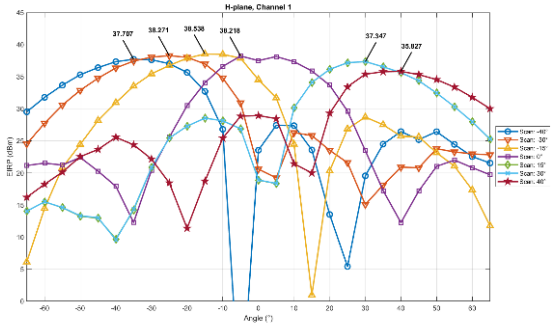
### Rx Sensitivity Table

| Channel | MCS | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Channel 1** | MCS9 | Boresight beam | | -74 | | dBm |
| | MCS5 | Boresight beam | | -81 | | dBm |
| | MCS1 | Boresight beam | | -85 | | dBm |
| **Channel 2** | MCS9 | Boresight beam | | -78 | | dBm |
| | MCS5 | Boresight beam | | -83 | | dBm |
| | MCS1 | Boresight beam | | -86 | | dBm |
| **Channel 3** | MCS9 | Boresight beam | | -77 | | dBm |
| | MCS5 | Boresight beam | | -83 | | dBm |
| | MCS1 | Boresight beam | | -85 | | dBm |
| **Channel 4** | MCS9 | Boresight beam | | -76 | | dBm |
| | MCS5 | Boresight beam | | -84 | | dBm |
| | MCS1 | Boresight beam | | -88 | | dBm |
| **Channel 5** | MCS9 | Boresight beam | | -79 | | dBm |
| | MCS5 | Boresight beam | | -83 | | dBm |
| | MCS1 | Boresight beam | | -88 | | dBm |
| **Channel 6** | MCS9 | Boresight beam | | -77 | | dBm |
| | MCS5 | Boresight beam | | -83 | | dBm |
| | MCS1 | Boresight beam | | -85 | | dBm |

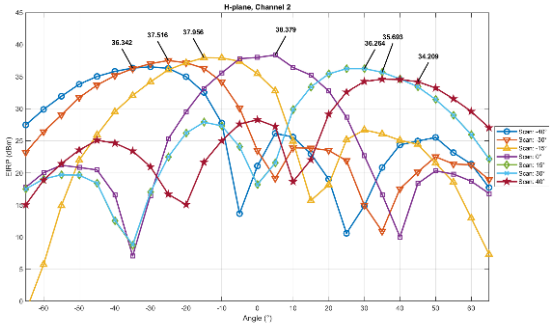
# 3. Typical Antenna Performance

**Performance Parameters of the MWC-740**

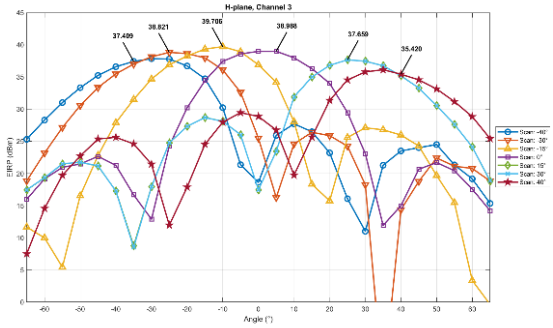
| ımeter | Conditions | Value (Typ.) | Units |
|---|---|---|---|
| Beam Steerability in Elevation and Azimuth | 16-elements active | +/-45˚ | deg |
| EIRP | $T_{amb}$=25$^0$C, MCS9, 16-elements active | 38 | dBm |
| Antenna Gain | $T_{amb}$=25$^0$C, MCS9, 16-elements active | 15 | dBi |



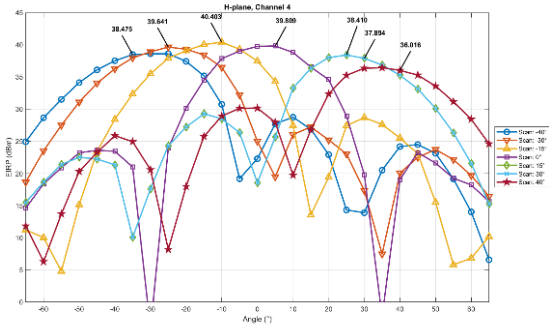

**H-plane Beam patterns, Stand Alone, ch. 1**



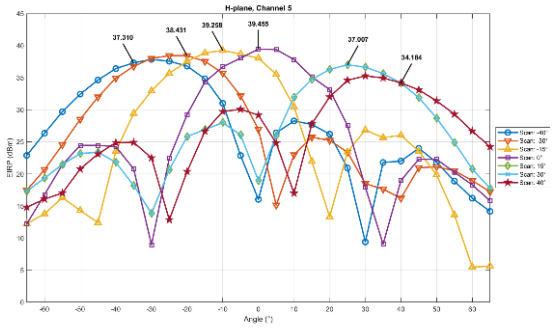

**H-plane Beam patterns, Stand Alone, ch. 2**



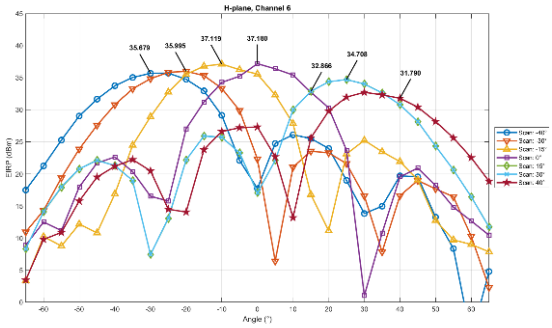

**H-plane Beam patterns, Stand Alone, ch. 3**



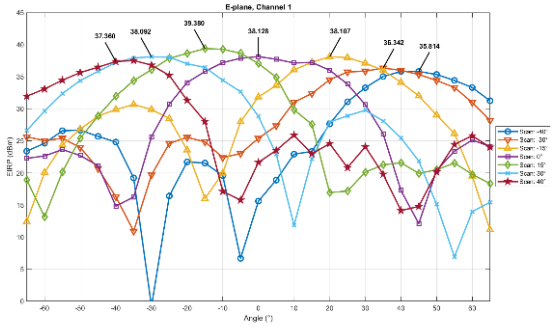

**H-plane Beam patterns, Stand Alone, ch. 4**



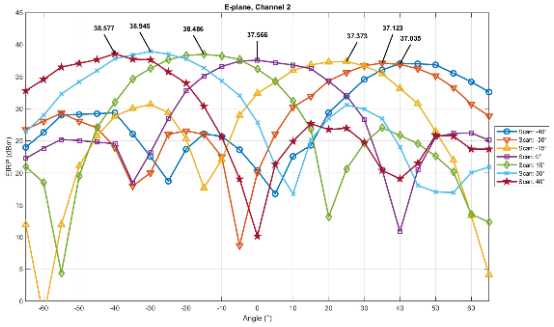

**H-plane Beam patterns, Stand Alone, ch. 5**



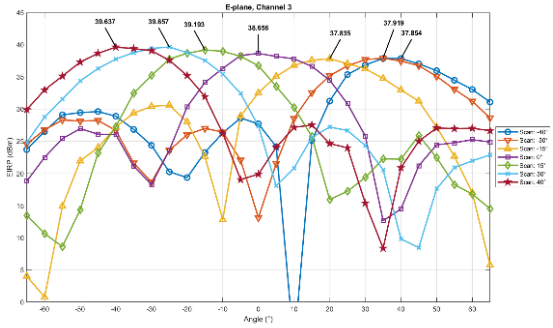

**H-plane Beam patterns, Stand Alone, ch. 6**



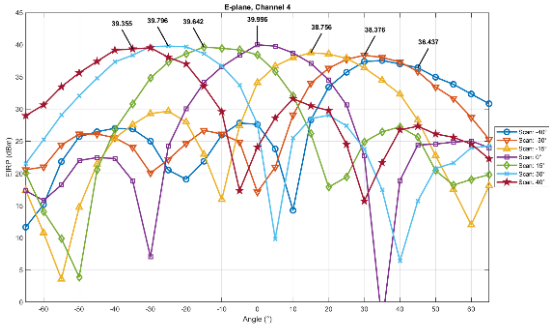

**E-plane Beam patterns, Stand Alone, ch. 1**



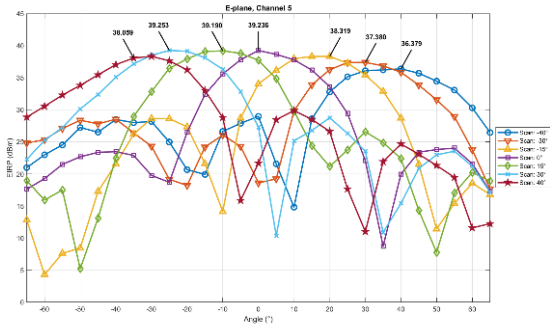

**E-plane Beam patterns, Stand Alone, ch. 2**




**E-plane Beam patterns, Stand Alone, ch. 3**




**E-plane Beam patterns, Stand Alone, ch. 4**




**E-plane Beam patterns, Stand Alone, ch. 5**

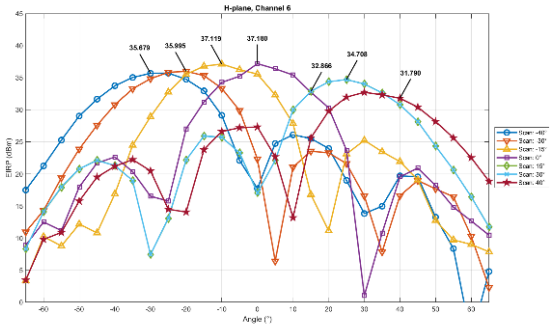



**Figure 6-24: E-plane Beam patterns, Stand Alone, ch. 6**