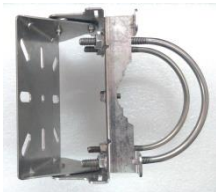


# IOP-PANFO-5M2001213

## 5GHz 18-20dBi Dual Polarization MIMO Panel Antenna

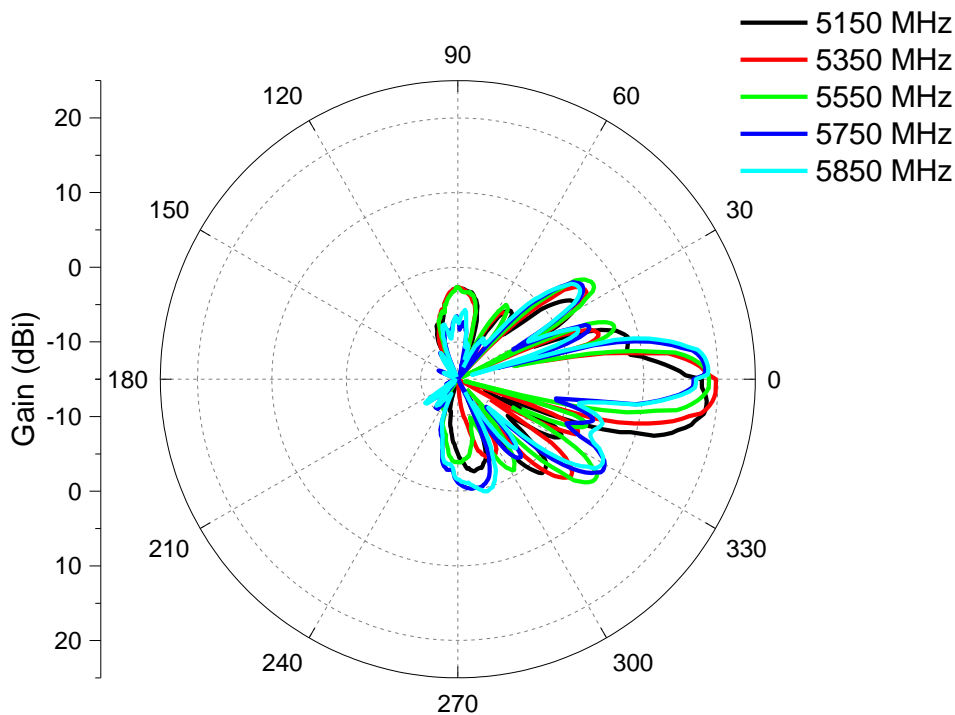


| Electrical Specification   |  |
|--|--|
| Frequency  | 4900 - 6100MHz   |
| Standard Frequency   | 18 - 20dBi +-0.5dBi  |
| Antenna Gain   | <ul style="list-style-type: none"> <li>■ 5150 – 5250MHz: 18.5 -19.5dBi</li> <li>■ 5250 – 5550MHz: 19.0 -20.5dBi</li> <li>■ 5550 – 5850MHz: 18.0 -18.5dBi</li> </ul>                |
| Special Frequency  | <ul style="list-style-type: none"> <li>■ 4900 – 4950MHz: 13.0-16.0dBi</li> <li>■ 5000 – 5100MHz: 16.5-18.5dBi</li> </ul>   |
| Antenna Gain   | <ul style="list-style-type: none"> <li>■ 5900 – 5950MHz: 18.0-18.5dBi</li> <li>■ 6000 – 6100MHz: 15.5-17.5dBi</li> </ul>   |
| VSWR   | 2.0 : 1 (Max.)   |
| Polarizations  | 90° Dual Polarization Vert. / Hor.   |
| Isolation  | 20 dB Typical  |
| HPBW H-Plane   | 12°  |
| HPBW V-Plane   | 13°  |
| Front Back Ratio   | 30dB   |
| Power handing  | 5W (cw)  |
| Input Impedance  | 50 Ohm   |
| Connectors   | SMA / N Plug x 2   |
| Cable Type/Length/Cable Loss   | RG233, 100cm, 1.7dB Max  |
| Mechanical Specification & Environment Characteristics   |  |
| Dimension  | 266 x 266 x 40 mm  |
| Weight   | 1000g  |
| Radome Color   | White  |
| Radome Material  | PC, UV resistant, UL746C   |
| Temperature  | -40°C to 80 °C   |
| Humidity   | 95% @ 55 °C  |
| Survival Wind Speed / Scale  | 250Km/hr & 17Beaufort scale  |
| Waterproof   | IP67   |
| Universal Stainless Mounting Kit*<br>P/N:IOP-UHMK-VESA75-1<br>L x W x H : 125 x 125 x 77mm<br>Weight : 0.9Kg   | <ul style="list-style-type: none"> <li>■ Wall Mount / Car Mount</li> <li>■ Pole Mount (1" ~ 2.5")</li> <li>■ Lamp Post (Belt Type)</li> <li>■ Electric Pole (Belt Type)</li> </ul> |
| * Support International VESA Standard Installation Size : 75 X 75 mm<br>* Support General ODU Installation Size : 60 X 60 mm ~ 75 X 75mm<br>* Support Triangle Fixing Point Fixed Way<br>* Support Screw-tightening Method<br>* Support + -40° Antenna Angle Adjustment Function |  |

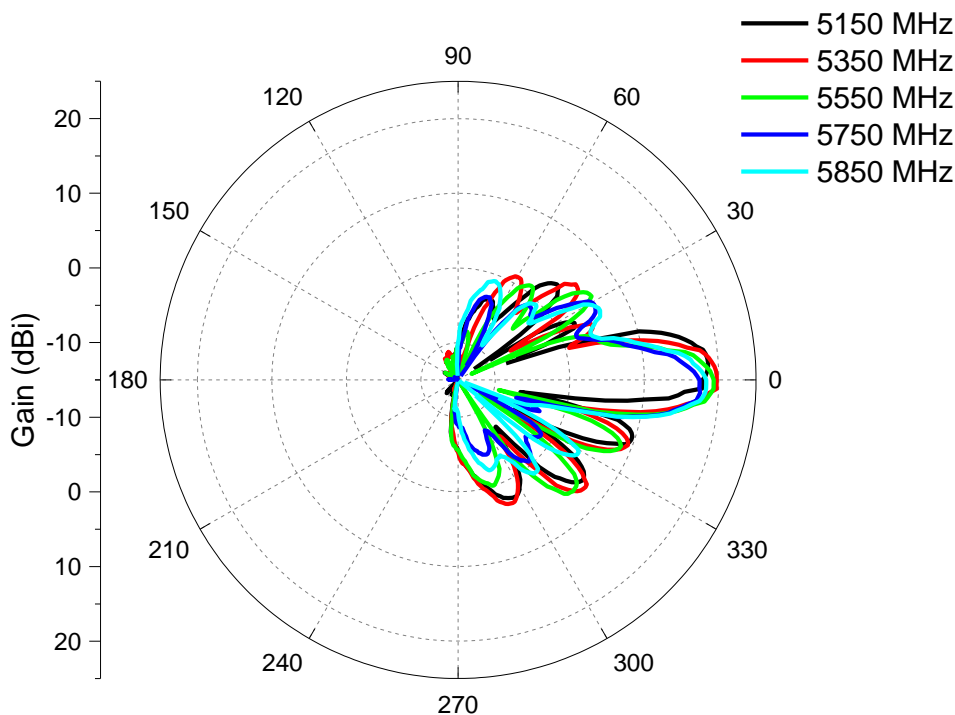
# Radiation Pattern

## H-Polar

### H-Plane -01

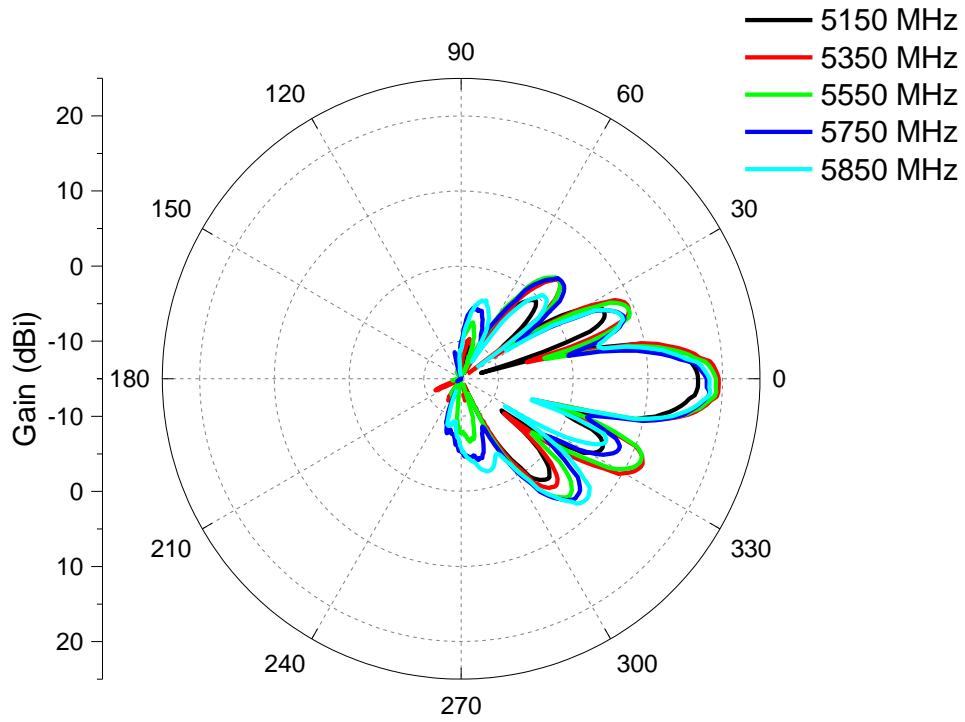


### H-Plane -02

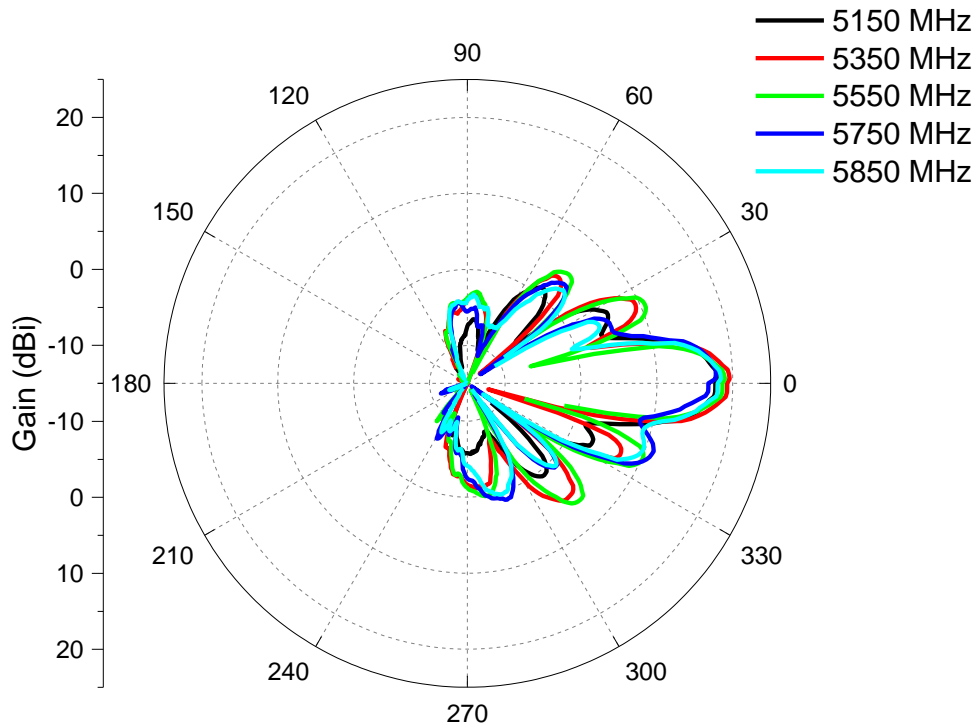


## V-Polar

### V-Plane -01



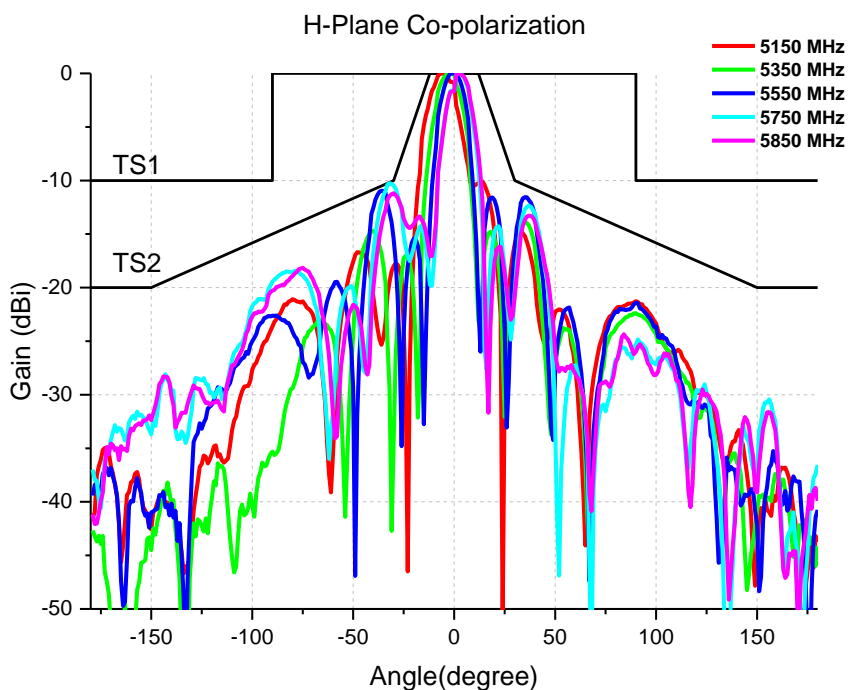
### V-Plane -02



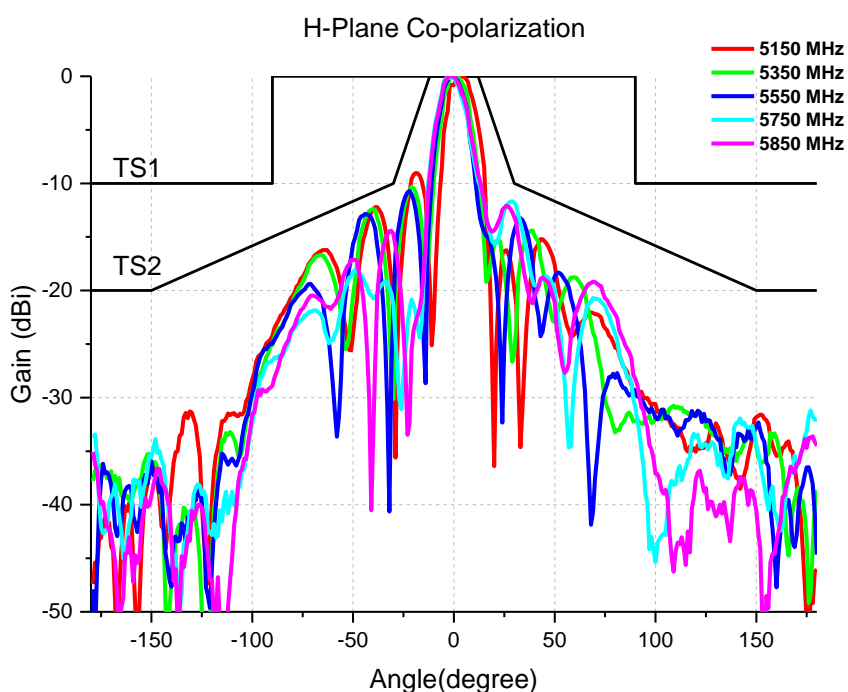
# ETSI Standard

## H-Polar

### H-Plane - 01

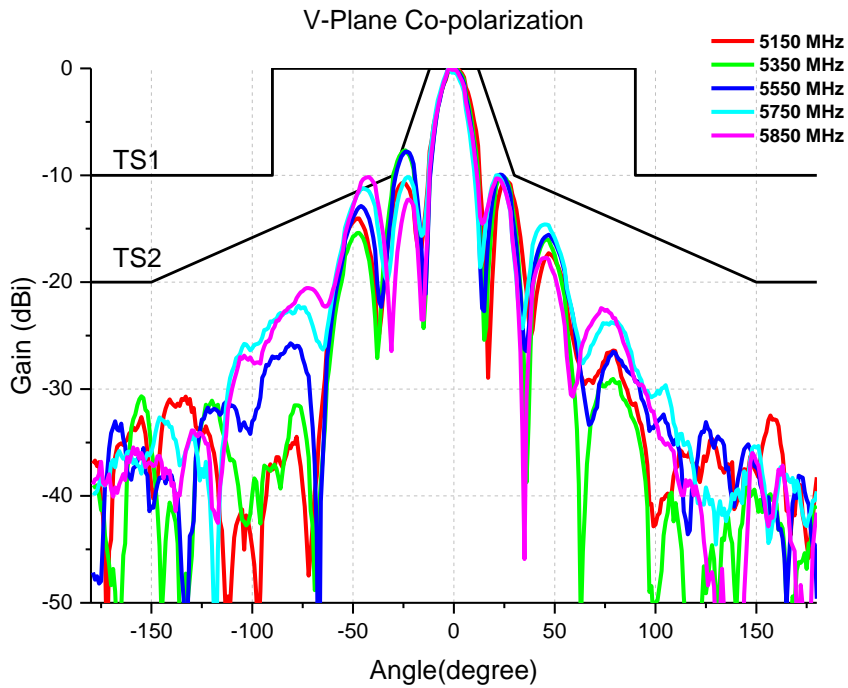


### H-Plane - 02

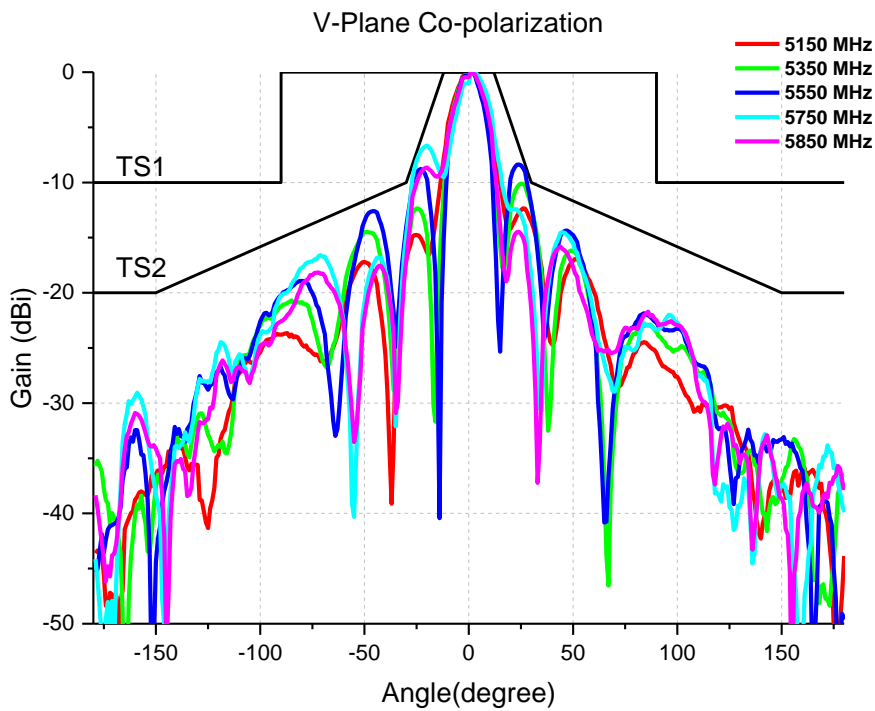


## V-Polar

### V-Plane -01



### V-Plane -02



## The PtP wireless transmission distance of this antenna is recommended:



### ■ IOP-EL-N Series--802.11an: Transmission distance 30~4200m (4.2Km)

**TX Antenna Gain**  
dBi

**RF Cable Loss**  
≤ 1 dB

**RF Output Power**  
dBm

Air Space Loss = - 92.4dBm -20\*LOG(Frequency)-20\*LOG(Distance)

**Point to Point Receive Sensitivity (RSSI) Suggest**

1. for Wireless Backbone System: **802.11ag** -60dBm< RSSI< -40dBm/ **802.11an** -50dBm< RSSI < -35dBm/ **802.11ac** -40dBm< RSSI< -25dBm  
 2. for Wireless Surveillance System : **802.11ag** -65dBm< RSSI< -40dBm/ **802.11an** -55dBm< RSSI < -35dBm/ **802.11ac** -45dBm< RSSI< -25dBm  
 3. for Wireless Surf Internet Coverage System : -60dBm < RSSI < -35dBm  
**Note: Receive Sensitivity (RSSI) don't under > -20dBm, it will have effect of Hearing Loss**

**RX Antenna Gain**  
dBi

**RF Cable Loss**  
≤ 1 dB

**RF Receive Sensitivity**  
dBm

**無線鏈路訊號值(dBm)計算 (Wireless PtP Signal Sensitivity Calculation)**

| 傳輸鏈路訊號計算 (Signal Selectivity Calculation) | RF Output Power dBm (Maximum) | RF Cable Loss dB (1m=0.6dB) | TX Antenna Gain dBi | Space Loss = 92.4 | Frequency Loss GHz | Distance Loss Km | Rain Loss = 2 dB | Tree Loss 1m=5dB | RX Antenna Gain dBi | RF Cable Loss Db (1m=0.6dB) |
|---|-------------------------------|-----------------------------|---------------------|-------------------|--------------------|------------------|------------------|------------------|---------------------|-----------------------------|
| 參數定義 (Parameter Definition)               | 無線最大輸出功率                      | RF線損耗                       | 天線增益                | 空間衰減              | 頻率衰減               | 距離衰減             | 雨衰               | 樹衰               | 天線增益                | RF線損耗                       |
| 請填入數據 (Please fill in your data)          | 21                            | 1.7                         | 19                  | 92.4              | 5.45               | 4.2              | 0                | 0                | 19                  | 1.7                         |
| 計算結果 (Calculation Results)                | -64.0                         |                             |                     |                   |                    |                  |                  |                  |                     |                             |

Note 1: Defined in wireless transmission adopts "HT40MHz" channel width to reach full-speed bandwidth traffic transmission calculation standard.

Note 2: The signal value is controlled below -64dBm, the transmission rate can reach 300Mbps, and the bandwidth throughput can reach 150Mbps.

### ■ IOP-MBAP-XACX Series--802.11ac: Transmission distance 30~2500m (2.5Km)

**TX Antenna Gain**  
dBi

**RF Cable Loss**  
≤ 1 dB

**RF Output Power**  
dBm

Air Space Loss = - 92.4dBm -20\*LOG(Frequency)-20\*LOG(Distance)

**Point to Point Receive Sensitivity (RSSI) Suggest**

1. for Wireless Backbone System: **802.11ag** -60dBm< RSSI< -40dBm/ **802.11an** -50dBm< RSSI < -35dBm/ **802.11ac** -40dBm< RSSI< -25dBm  
 2. for Wireless Surveillance System : **802.11ag** -65dBm< RSSI< -40dBm/ **802.11an** -55dBm< RSSI < -35dBm/ **802.11ac** -45dBm< RSSI< -25dBm  
 3. for Wireless Surf Internet Coverage System : -60dBm < RSSI < -35dBm  
**Note: Receive Sensitivity (RSSI) don't under > -20dBm, it will have effect of Hearing Loss**

**RX Antenna Gain**  
dBi

**RF Cable Loss**  
≤ 1 dB

**RF Receive Sensitivity**  
dBm

**無線鏈路訊號值(dBm)計算 (Wireless PtP Signal Sensitivity Calculation)**

| 傳輸鏈路訊號計算 (Signal Selectivity Calculation) | RF Output Power dBm (Maximum) | RF Cable Loss dB (1m=0.6dB) | TX Antenna Gain dBi | Space Loss = 92.4 | Frequency Loss GHz | Distance Loss Km | Rain Loss = 2 dB | Tree Loss 1m=5dB | RX Antenna Gain dBi | RF Cable Loss Db (1m=0.6dB) |
|---|-------------------------------|-----------------------------|---------------------|-------------------|--------------------|------------------|------------------|------------------|---------------------|-----------------------------|
| 參數定義 (Parameter Definition)               | 無線最大輸出功率                      | RF線損耗                       | 天線增益                | 空間衰減              | 頻率衰減               | 距離衰減             | 雨衰               | 樹衰               | 天線增益                | RF線損耗                       |
| 請填入數據 (Please fill in your data)          | 23                            | 1                           | 20                  | 92.4              | 5.4                | 2.5              | 0                | 0                | 20                  | 1                           |
| 計算結果 (Calculation Results)                | -54.0                         |                             |                     |                   |                    |                  |                  |                  |                     |                             |

Note 1: Defined in wireless transmission adopts "HT80MHz" channel width to reach full-speed bandwidth traffic transmission calculation standard. RSSI = -54dBm can support 867Mbps Data Rate & 450-550Mbps Throughput.

### ■ 802.11ac Wireless RSSI and Data Rate Table (R11e-5HacD Wireless Network Card Usage Reference)

| MIMO | HT80MHz | Data Rate       | RSSI/dBm  | HT80MHz | Data Rate       | RSSI/dBm  |
|------|---------|-----------------|-----------|---------|-----------------|-----------|
| 2X2  | MCS 9   | 780 ~ 867Mbps   | -50 ~ -56 | MCS 4   | 351 ~ 390Mbps   | -68 ~ -72 |
| 2X2  | MCS 8   | 702 ~ 780Mbps   | -56 ~ -59 | MCS 3   | 234 ~ 260Mbps   | -72 ~ -75 |
| 2X2  | MCS 7   | 585 ~ 650Mbps   | -59 ~ -62 | MCS 2   | 175.5 ~ 195Mbps | -75 ~ -80 |
| 2X2  | MCS 6   | 526.5 ~ 585Mbps | -63 ~ -65 | MCS 1   | 117 ~ 130Mbps   | -80 ~ -85 |
| 2X2  | MCS 5   | 468 ~ 520Mbps   | -65 ~ -68 | MCS 0   | 58.5 ~ 65Mbps   | -85 ~ -88 |