

DR-AP5018S-A is a tirband High Power Radio AP Router which including :

- 1 x DR5018s(IPQ5018) Board;
- 4 x Dipole Antennas;
- 1 x Enclosure;

### DR5018S options:

- DR5018S---2.4Ghz & 5Ghz & 6Ghz radios
- DR5018S---5G-5Ghz radio
- DR5018S-DB---2.4Ghz & 5Ghz radios
- DR5018S-2G6G---2.4Ghz & 6Ghz radios
- DR5018S-5G6G---5Ghz & 6Ghz radios

### Antenna:

#### DRA2G5G5D-A-B

- Frequency Range: 2.4~2.5&5.15~5.85GHz
- Gain(peak): 5.0dBi(Max) Dual Band Dipole Antenna

#### DR2G6G5D001

- Frequency Range: 2.4~2.5&5.15~7.15GHz
- Gain(peak): 5.0dBi(Max)

### Enclosure

- Dimension: 13 x 12.5 x 3.4 cm
- Aluminum alloy material
- Support Wallys' PCBA Mainboard



## Features

- Dual-core ARM 64 bit A53@1.0GHzProcessor
- 512MB DDRL3L System Memory
- 8MB NOR Flash, 128MB NAND Flash
- Support BT5.1(optional)
- 2x2 On-board 2.4GHz radio, up to 573Mbps physical Data Rate
- 2x2 On-board 5GHz radio,up to 2402Mbps physical Data Rate
- 2x2 On-board 6GHz radio,up to 2402Mbps physical Data Rate
- Support GPS(optional)
- Support Openwifi
- **CE,UKCA,FCC for routerboard/APS(include enclosure)**

## Applications

- 802.11ax MU- MIMO OFDMA Access Point
- Mesh router supporting Easy Mesh Hotel Wireless
- Smart AP TWT

## Product Description

The DR5018S, based on the IPQ5018 chipset, is an enterprise-grade wireless module that integrates a BT5.1 radio module, along with 2x2 2.4GHz, 2x2 5GHz, and 2x2 6GHz high-power radio modules. It is specifically designed to provide users with mobile access to high-bandwidth video streaming, voice communication, and data transmission, making it ideal for office environments as well as challenging RF conditions in factories and warehouses.

## Absolute Maximum Rating

| Parameter                   | Rating                  | Unit |
|-----------------------------|-------------------------|------|
| Supply Voltage              | 24V ~ 48V (DC Jack)     | V    |
| Operating Temperature Range | -40 ~ 70                | °C   |
| Storage Temperature Range   | -45 ~ 105               | °C   |
| Operating Humidity Range    | 5 ~ 95 (non-condensing) | %    |
| Storage Humidity Range      | 0 ~ 90 (non-condensing) | %    |

### Hardware Specifications

| Symbol                           | Parameter                                                                                                                                                                               |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                              | Qualcomm-Atheros IPQ5018                                                                                                                                                                |
| CPU Frequency                    | Quad-core ARM 64 bit A53 @ 1.0 GHz processor                                                                                                                                            |
| System Memory                    | 512MB DDR3L 16-bit interface with 32-bit memory bus design                                                                                                                              |
| Ethernet Port                    | 1 x 1Gbps Ethernet Port;<br>1 x 2.5Gbps Ethernet Port                                                                                                                                   |
| USB3.0                           | 1x USB2.0 Interface                                                                                                                                                                     |
| SGMII                            | 1x SGMII Interface                                                                                                                                                                      |
| UART                             | 1x UART Interface                                                                                                                                                                       |
| Wireless                         | 2x2 On-board 2.4GHz radio, up to 573Mbps physical Data Rate<br>2x2 On-board 5GHz radio, up to 2402Mbps physical Data Rate<br>2x2 On-board 6GHz radio, up to 2402Mbps physical Data Rate |
| Channel Spectrum Widths for WLAN | Support 20/40MHz at 2.4GHz<br>Support 20/40/80/160MHz at 5GHz<br>Support 20/40/80/160MHz at 6GHz                                                                                        |
| Modulation Techniques            | OFDMA: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM                                                                                                                      |
| Power                            | DC Jack: 12V-52V DC power supply<br>POE: Active POE, 802.3at/BT, 48V passive POE                                                                                                        |
| Nor Flash                        | 8 MB                                                                                                                                                                                    |
| Nand Flash                       | 128 MB                                                                                                                                                                                  |
| DDR                              | 512MB                                                                                                                                                                                   |
| Surge                            | IEC61000-4-5、EN61000-4-5、GB/T17626.5<br>10/700us 6KV                                                                                                                                    |
| Dimension                        | 12.2x10.5x2.1cm (heat sink included)                                                                                                                                                    |
| Certification                    | FCC/CE/UKCA                                                                                                                                                                             |

## Radio TX Specifications (2412MHz-2482MHz)

| Operating Mode          | Data Rate | Power   |          | Tolerance |
|-------------------------|-----------|---------|----------|-----------|
|                         |           | 1 Chain | 2 Chains |           |
| 2.4Ghz<br>802.11ax HE20 | MCS0      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS1      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS2      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS3      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS4      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS5      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS6      | 23dBm   | 26dBm    | ±2dB      |
|                         | MCS7      | 22dBm   | 25dBm    | ±2dB      |
|                         | MCS8      | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS9      | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS10     | 18dBm   | 21dBm    | ±2dB      |
|                         | MCS11     | 17dbm   | 20dbm    | ±2dB      |
| 2.4Ghz<br>802.11ax HE40 | MCS0      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS1      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS2      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS3      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS4      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS5      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS6      | 23dbm   | 26dbm    | ±2dB      |
|                         | MCS7      | 22dBm   | 25dBm    | ±2dB      |
|                         | MCS8      | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS9      | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS10     | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS11     | 19dbm   | 22dbm    | ±2dB      |

## Radio RX Specifications (2412MHz-2482MHz)

| Operating Mode             | Data Rate | RX Sensitivity | Tolerance |
|----------------------------|-----------|----------------|-----------|
| 2.4Ghz 802.11b             | 1Mbps     | -98            | ±2dB      |
|                            | 2Mbps     | -95            | ±2dB      |
|                            | 5.5Mbps   | -92            | ±2dB      |
|                            | 11Mbps    | -92            | ±2dB      |
| 2.4Ghz 802.11g             | 6Mbps     | -94            | ±2dB      |
|                            | 54Mbps    | -80            | ±2dB      |
| 2.4Ghz 802.11n/ac<br>VHT20 | MCS0      | -92            | ±2dB      |
|                            | MCS7      | -75            | ±2dB      |
| 2.4Ghz 802.11n/ac<br>VHT40 | MCS0      | -90            | ±2dB      |
|                            | MCS7      | -70            | ±2dB      |
| 2.4Ghz 802.11ax<br>HE20    | MCS0      | -92            | ±2dB      |
|                            | MCS8      | -74            | ±2dB      |
|                            | MCS9      | -72            | ±2dB      |
|                            | MCS10     | -69            | ±2dB      |
|                            | MCS11     | -64            | ±2dB      |
| 2.4Ghz 802.11ax<br>HE40    | MCS0      | -89            | ±2dB      |
|                            | MCS8      | -72            | ±2dB      |
|                            | MCS9      | -69            | ±2dB      |
|                            | MCS10     | -66            | ±2dB      |
|                            | MCS11     | -61            | ±2dB      |

## RF Parameter(5.15GHz-5.9GHz)

| Operating Mode           | Data Rate | TX Power | RX Sensitivity | Tolerance |
|--------------------------|-----------|----------|----------------|-----------|
| 5GHz 802.11a             | 6Mbps     | 27dbm    | -96            | ±2dB      |
|                          | 54Mbps    | 25dbm    | -81            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT20 | MCS0      | 27dbm    | -96            | ±2dB      |
|                          | MCS7      | 25dbm    | -78            | ±2dB      |
|                          | MCS8      | 24dBm    | -76            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT40 | MCS0      | 27dbm    | -93            | ±2dB      |
|                          | MCS7      | 25dBm    | -75            | ±2dB      |
|                          | MCS8      | 24dBm    | -73            | ±2dB      |
|                          | MCS9      | 23dBm    | -72            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT80 | MCS0      | 26dbm    | -90            | ±2dB      |
|                          | MCS7      | 25dBm    | -72            | ±2dB      |
|                          | MCS8      | 24dBm    | -70            | ±2dB      |
|                          | MCS9      | 23dBm    | -68            | ±2dB      |
| 5Ghz 802.11ax<br>HE20    | MCS0      | 27dbm    | -95            | ±2dB      |
|                          | MCS9      | 23dBm    | -74            | ±2dB      |
|                          | MCS10     | 22dBm    | -69            | ±2dB      |
|                          | MCS11     | 22dBm    | -66            | ±2dB      |
| 5Ghz 802.11ax<br>HE40    | MCS0      | 27dbm    | -92            | ±2dB      |
|                          | MCS9      | 23dBm    | -71            | ±2dB      |
|                          | MCS10     | 22dBm    | -66            | ±2dB      |
|                          | MCS11     | 22dBm    | -63            | ±2dB      |
| 5Ghz 802.11ax<br>HE80    | MCS0      | 26dbm    | -89            | ±2dB      |
|                          | MCS9      | 24dBm    | -68            | ±2dB      |
|                          | MCS10     | 22dBm    | -63            | ±2dB      |
|                          | MCS11     | 20dBm    | -60            | ±2dB      |

|                        |       |       |     |      |
|------------------------|-------|-------|-----|------|
| 5Ghz 802.11ax<br>HE160 | MCS0  | 24dbm | -86 | ±2dB |
|                        | MCS9  | 21dBm | -65 | ±2dB |
|                        | MCS10 | 20dBm | -60 | ±2dB |
|                        | MCS11 | 17dBm | -57 | ±2dB |

### RF Parameter(5.955GHz-7.125GHz)

| Operating Mode           | Data Rate | TX Power | RX Sensitivity | Tolerance |
|--------------------------|-----------|----------|----------------|-----------|
| 6GHz 802.11a             | 6Mbps     | 27dbm    | -96            | ±2dB      |
|                          | 54Mbps    | 25dbm    | -81            | ±2dB      |
| 6Ghz 802.11n/ac<br>VHT20 | MCS0      | 27dbm    | -96            | ±2dB      |
|                          | MCS7      | 25dbm    | -78            | ±2dB      |
|                          | MCS8      | 24dBm    | -76            | ±2dB      |
| 6Ghz 802.11n/ac<br>VHT40 | MCS0      | 27dbm    | -93            | ±2dB      |
|                          | MCS7      | 25dBm    | -75            | ±2dB      |
|                          | MCS8      | 24dBm    | -73            | ±2dB      |
|                          | MCS9      | 23dBm    | -72            | ±2dB      |
| 6Ghz 802.11n/ac<br>VHT80 | MCS0      | 26dbm    | -90            | ±2dB      |
|                          | MCS7      | 25dBm    | -72            | ±2dB      |
|                          | MCS8      | 24dBm    | -70            | ±2dB      |
|                          | MCS9      | 23dBm    | -68            | ±2dB      |
| 6Ghz 802.11ax<br>HE20    | MCS0      | 27dbm    | -95            | ±2dB      |
|                          | MCS9      | 23dBm    | -74            | ±2dB      |
|                          | MCS10     | 22dBm    | -69            | ±2dB      |
|                          | MCS11     | 22dBm    | -66            | ±2dB      |
| 6Ghz 802.11ax<br>HE40    | MCS0      | 27dbm    | -92            | ±2dB      |
|                          | MCS9      | 23dBm    | -71            | ±2dB      |
|                          | MCS10     | 22dBm    | -66            | ±2dB      |
|                          | MCS11     | 22dBm    | -63            | ±2dB      |
| 6Ghz 802.11ax<br>HE80    | MCS0      | 26dbm    | -89            | ±2dB      |
|                          | MCS9      | 24dBm    | -68            | ±2dB      |
|                          | MCS10     | 22dBm    | -63            | ±2dB      |
|                          | MCS11     | 20dBm    | -60            | ±2dB      |

|                        |       |       |     |      |
|------------------------|-------|-------|-----|------|
| 6Ghz 802.11ax<br>HE160 | MCS0  | 24dbm | -86 | ±2dB |
|                        | MCS9  | 21dBm | -65 | ±2dB |
|                        | MCS10 | 20dBm | -60 | ±2dB |
|                        | MCS11 | 17dBm | -57 | ±2dB |

### Pin Definitions

| Pin | Signal            | Description |
|-----|-------------------|-------------|
| 1   | GND               |             |
| 2   | NC                |             |
| 3   | NC                |             |
| 4   | NC                |             |
| 5   | NC                |             |
| 6   | NC                |             |
| 7   | NC                |             |
| 8   | NC                |             |
| 9   | GPIO26            |             |
| 10  | GPIO25            |             |
| 11  | GPIO24            |             |
| 12  | GPIO23            |             |
| 13  | 2.5G LINK ACT IED |             |
| 14  | 1GE LINK LED CONN |             |
| 15  | POWER LED         |             |
| 16  | VCC               | 3.3V        |

## Product Version

|   | P/N          | Radio            | Frequency              | certification |             |
|---|--------------|------------------|------------------------|---------------|-------------|
| 1 | DR5018S      | 2.4Ghz 5Ghz 6Ghz | 2.5G+1G Ethernet & POE | CE,UKCA,FCC   | With GPS    |
| 2 | DR5018S-5G   | 5Ghz             | 1G Ethernet & POE      | CE,UKCA,FCC   | Without GPS |
| 3 | DR5018S-DB   | 2.4Ghz 5Ghz      | 1G Ethernet & POE      | CE,UKCA,FCC   | Without GPS |
| 4 | DR5018S-2G6G | 2.4Ghz 6Ghz      | 1G Ethernet & POE      | Running       | With GPS    |
| 5 | DR5018S-5G6G | 5Ghz 6Ghz        | 1G Ethernet & POE      | Running       | With GPS    |