

### Features

- Quad-core ARM 64bit A53@1.8GHz Processor
- 1GB DDRL3L System Memory
- 8MB NOR Flash, 256MB NAND Flash
- Supports Dynamic Frequency Selection(DFS)
- 2x2 On-board 2.4GHzradio, up to 573Mbps physical Data Rate
- 2x2 On-board 5GHz radio, up to 1201Mbps physical Data Rate



### Applications

- 802.11ax MU-MIMO OFDMA Access Point
- Smart AP TWT

### Product Description

DR6018-S based on IPQ6010 chipset is an enterprise wireless module integrated with 2x2 5G high power Radio module and 2x2 2.4G high power Radio module designed specifically to provide users with mobile access to high-bandwidth video streaming, voice, and data transmission for office and challenging RF environment in factories, warehouses establishment.

### 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 IPQ6010                                                                                                                                                                |
| CPU Frequency | Quad-core ARM 64 bit A53 @ 1.8 GHz processor                                                                                                                                            |
| System Memory | 1GB (2 x 512MB) DDR3L 16-bit interface with 32-bit memory bus design                                                                                                                    |
| Ethernet Port | 1 x 1Gbps Ethernet Ports & POE<br>1 x 1Gbps Ethernet Ports                                                                                                                              |
| NGFF Slot     | M.2 (NGFF) E-Key Socket with MiniPCle 3.0(For WiFi Module)                                                                                                                              |
| SD Card Slot  | 1x SD Card Slot(Optional)                                                                                                                                                               |
| USB /header   | 1x SD Card Slot(Optional)                                                                                                                                                               |
| POE           | Option 1: 48V~56V passive POE/Active POE(Support 802.3 at)<br>Option 2: 24V~48V passive POE                                                                                             |
| DC Jack       | 24V~48V power supply                                                                                                                                                                    |
| LED header    | 2.0 pitch pin header                                                                                                                                                                    |
| UART          | Universal asynchronous receiver transmitter serial ports                                                                                                                                |
| Wireless      | On-board 802.11 b/g/n/ax 2x2 MU-MIMO OFDMA 2.4GHz, max 27dBm per chain (2 MMCX Connectors)<br>On-board 802.11 a/n/ac/ax 2x2 MU-MIMO OFDMA 5GHz, max 27dBm per chain (2 MMCX Connectors) |
| Nor Flash     | 8 MB                                                                                                                                                                                    |
| Nand Flash    | 256 MB                                                                                                                                                                                  |
| Dimension     | 120mm x 105mm x 20mm                                                                                                                                                                    |
| GPS           | Support(Optional)                                                                                                                                                                       |

## Radio TX Specifications (5180MHz-5825MHz)

| Operating Mode         | Data Rate | Power   |          | Tolerance |
|------------------------|-----------|---------|----------|-----------|
|                        |           | 1 Chain | 2 Chains |           |
| 5GHz<br>802.11ax HE20  | MCS0      | 27dBm   | 30dbm    | ±2dB      |
|                        | MCS1      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS2      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS3      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS4      | 25dBm   | 28dBm    | ±2dB      |
|                        | MCS5      | 24dBm   | 27dBm    | ±2dB      |
|                        | MCS6      | 23dBm   | 26dBm    | ±2dB      |
|                        | MCS7      | 21dBm   | 24dBm    | ±2dB      |
|                        | MCS8      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS9      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS10     | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS11     | 19dBm   | 22dbm    | ±2dB      |
| 5GHz<br>802.11ax HE400 | MCS0      | 27dBm   | 30dbm    | ±2dB      |
|                        | MCS1      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS2      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS3      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS4      | 25dBm   | 28dBm    | ±2dB      |
|                        | MCS5      | 24dBm   | 27dBm    | ±2dB      |
|                        | MCS6      | 23dBm   | 26dBm    | ±2dB      |
|                        | MCS7      | 21dBm   | 24dBm    | ±2dB      |
|                        | MCS8      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS9      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS10     | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS11     | 19dBm   | 22dbm    | ±2dB      |
| 5GHz<br>802.11ax HE80  | MCS0      | 27dBm   | 30dbm    | ±2dB      |
|                        | MCS1      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS2      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS3      | 26dBm   | 29dBm    | ±2dB      |
|                        | MCS4      | 25dBm   | 28dBm    | ±2dB      |
|                        | MCS5      | 24dBm   | 27dBm    | ±2dB      |
|                        | MCS6      | 23dBm   | 26dBm    | ±2dB      |
|                        | MCS7      | 21dBm   | 24dBm    | ±2dB      |
|                        | MCS8      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS9      | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS10     | 20dBm   | 23dBm    | ±2dB      |
|                        | MCS11     | 19dBm   | 22dbm    | ±2dB      |

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

| Operating Mode          | Data Rate | Power   |          | Tolerance |
|-------------------------|-----------|---------|----------|-----------|
|                         |           | 1 Chain | 2 Chains |           |
| 2.4Ghz<br>802.11ax HE20 | MCS0      | 27dbm   | 30dbm    | ±2dB      |
|                         | MCS1      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS2      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS3      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS4      | 25dBm   | 28dBm    | ±2dB      |
|                         | MCS5      | 24dBm   | 27dBm    | ±2dB      |
|                         | MCS6      | 23dBm   | 26dBm    | ±2dB      |
|                         | MCS7      | 21dBm   | 24dBm    | ±2dB      |
|                         | MCS8      | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS9      | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS10     | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS11     | 19dbm   | 22dbm    | ±2dB      |
| 2.4Ghz<br>802.11ax HE40 | MCS0      | 27dbm   | 30dbm    | ±2dB      |
|                         | MCS1      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS2      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS3      | 26dBm   | 29dBm    | ±2dB      |
|                         | MCS4      | 26dBm   | 28dBm    | ±2dB      |
|                         | MCS5      | 25dBm   | 27dBm    | ±2dB      |
|                         | MCS6      | 24dBm   | 26dBm    | ±2dB      |
|                         | MCS7      | 23dBm   | 24dBm    | ±2dB      |
|                         | MCS8      | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS9      | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS10     | 20dBm   | 23dBm    | ±2dB      |
|                         | MCS11     | 19dbm   | 22dbm    | ±2dB      |

## Radio RX Specifications (5180MHz-5825MHz)

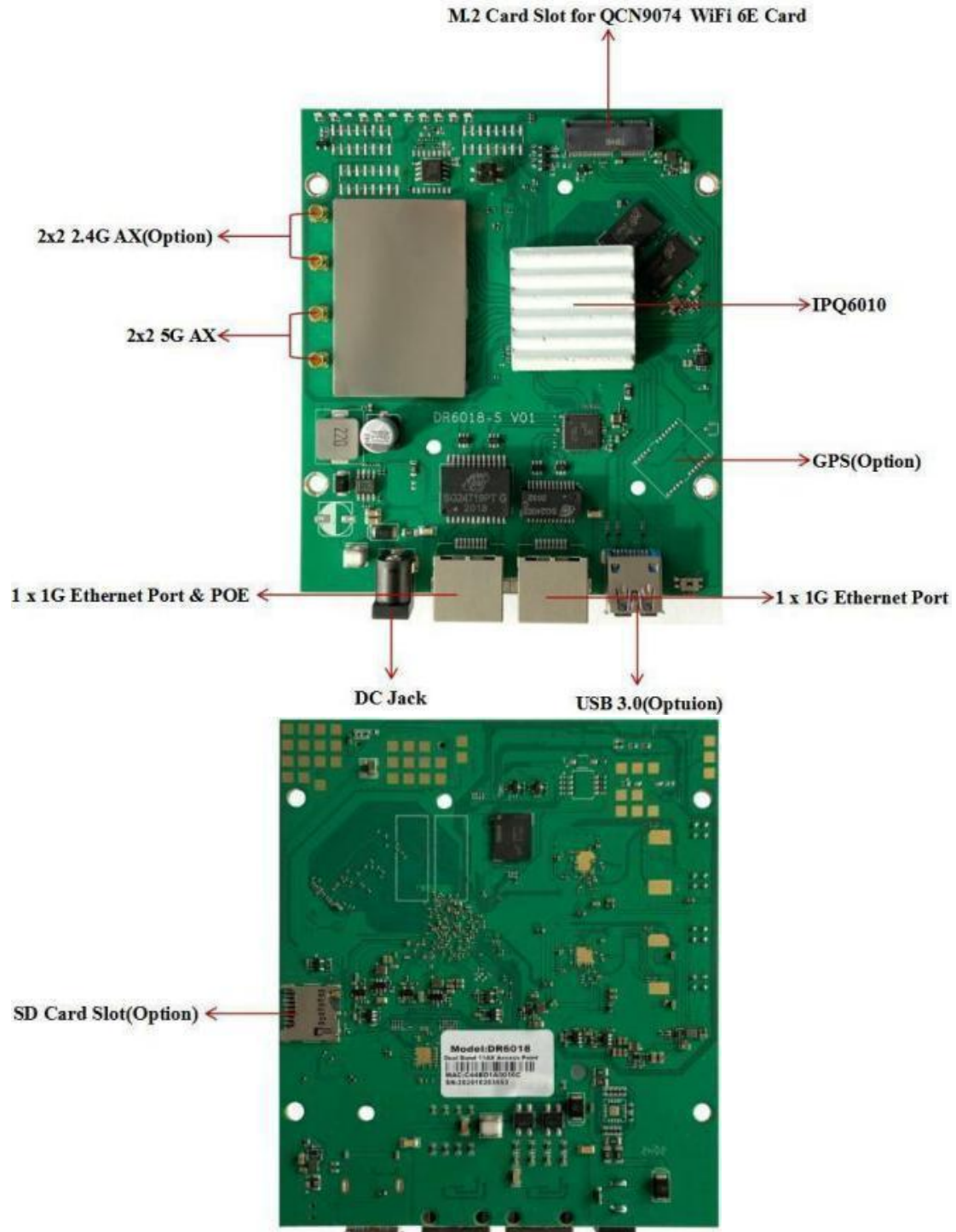
| Operating Mode           | Data Rate | RX Sensitivity | Tolerance |
|--------------------------|-----------|----------------|-----------|
| 5GHz 802.11a             | 6Mbps     | -96            | ±2dB      |
|                          | 54Mbps    | -81            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT20 | MCS0      | -96            | ±2dB      |
|                          | MCS7      | -78            | ±2dB      |
|                          | MCS8      | -76            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT40 | MCS0      | -93            | ±2dB      |
|                          | MCS7      | -77            | ±2dB      |
|                          | MCS8      | -76            | ±2dB      |
|                          | MCS9      | -73            | ±2dB      |
| 5Ghz 802.11n/ac<br>VHT80 | MCS0      | -90            | ±2dB      |
|                          | MCS7      | -74            | ±2dB      |
|                          | MCS8      | -71            | ±2dB      |
|                          | MCS9      | -68            | ±2dB      |
| 5Ghz 802.11ax<br>HE20    | MCS0      | -95            | ±2dB      |
|                          | MCS9      | -76            | ±2dB      |
|                          | MCS10     | -73            | ±2dB      |
|                          | MCS11     | -70            | ±2dB      |
| 5Ghz 802.11ax<br>HE40    | MCS0      | -93            | ±2dB      |
|                          | MCS9      | -73            | ±2dB      |
|                          | MCS10     | -70            | ±2dB      |
|                          | MCS11     | -67            | ±2dB      |
| 5Ghz 802.11ax<br>HE80    | MCS0      | -90            | ±2dB      |
|                          | MCS9      | -70            | ±2dB      |
|                          | MCS10     | -67            | ±2dB      |
|                          | MCS11     | -65            | ±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     | -66            | ±2dB      |
| 2.4Ghz 802.11ax<br>HE40    | MCS0      | -89            | ±2dB      |
|                            | MCS8      | -72            | ±2dB      |
|                            | MCS9      | -69            | ±2dB      |
|                            | MCS10     | -66            | ±2dB      |
|                            | MCS11     | -63            | ±2dB      |

### Interface MAP

125mm x 105mm x 20mm



## GPIO Pin Mapping

| GPIO    | Signal Name             | GPIO    | Signal Name             |
|---------|-------------------------|---------|-------------------------|
| GPIO_0  | AUDIO_MUTE_BUT          | GPIO_1  | QPIC_BUSY_N             |
| GPIO_2  | MIC_VOL_M               | GPIO_3  | QPIC_WE_N               |
| GPIO_4  | QPIC_RE_N               | GPIO_5  | QPIC_DAT4               |
| GPIO_6  | QPIC_DAT5               | GPIO_7  | QPIC_DAT6               |
| GPIO_8  | QPIC_DAT7               | GPIO_9  | WPS                     |
| GPIO_10 | QPIC_CLE_N              | GPIO_11 | QPIC_NAND_CE_N          |
| GPIO_12 | QPIC_DAT1               | GPIO_13 | QPIC_DAT2               |
| GPIO_14 | QPIC_DAT3               | GPIO_15 | QPIC_DAT0               |
| GPIO_16 | MIC_KPD_PWR_N           | GPIO_17 | QPIC_ALE                |
| GPIO_18 | KYPD_HOM_N              | GPIO_19 | GND                     |
| GPIO_20 | Boot_Config (PULL_DOWN) | GPIO_21 | MUTE_ON                 |
| GPIO_22 | ADC_RST                 | GPIO_23 | WSA_SWR_CLK             |
| GPIO_24 | WSA_SWR_DATA            | GPIO_25 | PWM_LED_RST             |
| GPIO_26 | Boot_Config (PULL_DOWN) | GPIO_27 | WSA_EN_R                |
| GPIO_28 | WSA_EN_L                | GPIO_29 | PDM_CLK0                |
| GPIO_30 | PDM_DATA0               | GPIO_31 | PDM_CLK1                |
| GPIO_32 | PDM_DATA1               | GPIO_33 | EXT_MCLK2_ADC           |
| GPIO_34 | MIC_VOL_P               | GPIO_35 | LED_5G                  |
| GPIO_36 | PCIE0_WAKE              | GPIO_37 | LED_2GS                 |
| GPIO_38 | SPI0_CLK                | GPIO_39 | SPI0_CS_NI              |
| GPIO_40 | SPI0_MISO               | GPIO_41 | SPI0_MOSI               |
| GPIO_42 | BLSP2_SCL               | GPIO_43 | BLSP2_SDA               |
| GPIO_44 | BLSP2_UART_RX           | GPIO_45 | BLSP2_UART_TX           |
| GPIO_46 | BLSP5_SCL               | GPIO_47 | BLSP5_SDA               |
| GPIO_48 | NC                      | GPIO_49 | Boot_Config (PULL_DOWN) |
| GPIO_50 | LED_USB0                | GPIO_51 | BT_PRIORITY_PTA11       |
| GPIO_52 | WLA_ACTI_PTA12          | GPIO_53 | BT_ACT_PTA10            |
| GPIO_54 | Boot_Config (PULL_DOWN) | GPIO_55 | NC                      |
| GPIO_56 | NC                      | GPIO_57 | NC                      |
| GPIO_58 | NC                      | GPIO_59 | PCIE0_CLK_REQ           |
| GPIO_60 | PCIE0_RSTn              | GPIO_61 | NC                      |
| GPIO_62 | SD_DET                  | GPIO_63 | SD_WP                   |
| GPIO_64 | MDC                     | GPIO_65 | MDIO                    |
| GPIO_66 | SD_LDO_EN               | GPIO_67 | NC                      |
| GPIO_68 | NC                      | GPIO_69 | SPI_CLK_UART_RTSn       |
| GPIO_70 | SPI_CS_UART_CTSn        | GPIO_71 | SPI_MISO_UART_RX        |
| GPIO_72 | SPI_MOSI_UART_TX        | GPIO_73 | USB_OTG                 |
| GPIO_74 | NC                      | GPIO_75 | Malibu_RESET            |
| GPIO_76 | NAPA_INT0               | GPIO_77 | NAPA_RESET              |
| GPIO_78 | QTZ_INT                 | GPIO_79 | QTZ_RESET               |



### Boot Config Switch

| Boot_Config |     |     | Boot up Interface Select     |
|-------------|-----|-----|------------------------------|
| S7A         | S7B | S7C | Boot_Config Switch1 (S7)     |
| 0           | 0   | 0   | SPI NOR. (Default)           |
| 0           | 0   | 1   | eMMC                         |
| 0           | 1   | 0   | QPIC, Parallel NAND          |
| 0           | 1   | 1   | USB3.0                       |
| S7D         |     |     | Boot_Config Switch1 (S7)     |
| 0           |     |     | Boot from code ram (Default) |
| 1           |     |     | Boot from ROM                |
| S9          |     |     | Boot_Config Switch2 (S9)     |
| 0           |     |     | No auth.(Default)            |
| 1           |     |     | Auth is required             |