

## RM4538A-B (MTK3331,GPS+BEIDOU)

Parameter	Specification
Power Supply	* Supply voltage: 3.0V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:45mA @VCC=VBAT=3.3V * Tracking:40mA @VCC=VBAT=3.3V * Backup:15uA @VBAT=3.3V
Receiver Type	* Code 66 search channels, 22 synchronous tracking channels * GPS&QZSS L1 1575.42MHz C/A , Beidou B1 1561.098MHz SBAS: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	* Tracking: -165dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTFF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* Up to 10Hz,1Hz by fault
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD and RXD * Supports baud rate from 4800bps to 115200bps, 9600bps by default * UART port is used for NMEA output, MTK proprietary commands input and firmware upgrade
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C

## RM4538A-G (MTK3331,GPS+GLONASS)

Parameter	Specification
Power Supply	* Supply voltage: 3.0V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:45mA @VCC=VBAT=3.3V * Tracking:40mA @VCC=VBAT=3.3V * Backup:15uA @VBAT=3.3V
Receiver Type	* Code 66 search channels, 22 synchronous tracking channels * GPS&QZSS L1 1575.42MHz C/A ,GLONASS L1 1602.5625MHz SBAS: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	* Tracking: -165dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTFF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* Up to 10Hz,1Hz by fault
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD and RXD * Supports baud rate from 4800bps to 115200bps, 9600bps by default * UART port is used for NMEA output, MTK proprietary commands input and firmware upgrade
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C

## RU4538-G (UBLOX8030,GPS+GLONASS)

Parameter	Specification
Power Supply	* Supply voltage: 3.0V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:45mA @VCC=VBAT=3.3V * Tracking:40mA @VCC=VBAT=3.3V * Backup:15uA @VBAT=3.3V
Receiver Type	* Code 72 search channels, 22 synchronous tracking channels * GPS&QZSS L1 1575.42MHz C/A , , GLONASS L1OF 1602MHz, SBAS: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	* Tracking: -167dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTFF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* Up to 10Hz,1Hz by fault
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD and RXD * Supports baud rate from 4800bps to 115200bps, 9600bps by default * UART port is used for NMEA output, MTK proprietary commands input and firmware upgrade
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C

## RU4538 (UBLOX7020,GPS)

Parameter	Specification
Power Supply	* Supply voltage: 3.0V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:45mA @VCC=VBAT=3.3V * Tracking:40mA @VCC=VBAT=3.3V * Backup:15uA @VBAT=3.3V
Receiver Type	* Code 56 search channels, 22 synchronous tracking channels * GPS&QZSS L1 1575.42MHz C/A SBAS: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	* Tracking: -163dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTFF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* 1Hz
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD * Supports baud rate from 4800bps to 115200bps, 9600bps by default * UART port is used for NMEA output,
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C

## RM4538-R (MTK3337,GPS)

Parameter	Specification
Power Supply	* Supply voltage: 3.0V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:28mA @VCC=VBAT=3.3V * Tracking:20mA @VCC=VBAT=3.3V * Backup:7uA @VBAT=3.3V
Receiver Type	* Code 66 search channels, GPS&QZSS L1 1575.42MHz C/A * 22 simultaneous tracking channels
Sensitivity	* Tracking: -165dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTFF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* 1Hz
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD * baud rate: 9600bps * UART port is used for NMEA output
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C

## RG4538 (GK9501,GPS)

Parameter	Specification
Power Supply	* Supply voltage: 3.3V~5.0V Typical: 3.3V
Power Consumption	* Acquisition:60mA @VCC=VBAT=3.3V * Tracking:45mA @VCC=VBAT=3.3V * Backup:25uA @VBAT=3.3V
Receiver Type	* Code 72 search channels * GPS&QZSS L1 1575.42MHz C/A
Sensitivity	* Tracking: -163dBm * Re-acquisition: -156dBm * Acquisition: -146dBm
TTF (Autonomous)	* Cold start: 35s typ @-130dBm * Warm start: 30s typ @-130dBm * Hot start: 1s typ @-130dBm
Horizontal Position Accuracy (Autonomous)	* <2.5m CEP @-130 dBm
Max Update Rate	* 1Hz
Accuracy of 1PPS Signal	* not enabled
Acceleration Accuracy	* Without aid: 0.1m/s <sup>2</sup>
Dynamic Performance	* Maximum altitude: 18,000m * Maximum velocity: 515m/s * Acceleration: 4G
UART Port	* UART Port: TXD * Supports baud rate from 4800bps to 115200bps, 9600bps by default * UART port is used for NMEA output
Temperature Range	* Normal operation: -40°C ~ +85°C * Storage temperature: -45°C ~ +125°C