

# **Ruijie RG-MTFi-M520**

## **Mobile LTE WiFi Router**

### **Datasheet**

Ruijie Networks Co., Ltd.

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## 1 Product Pictures



RG-MTFi-M520

## 2 Product Overview

Ruijie RG-MTFi-M520 exclusively offers you an industry 4G to wireless system and entertainment hub - all in one easy-to-use platform. Onboard with simultaneous dual-SIM link aggregation, the RG-MTFi-M520 transforms 3G/4G to wireless connectivity with ease. The device implements the latest LTE solution supporting advanced communication systems such as TD-LTE, FDD-LTE, TD-SCDMA and UMTS<sup>1</sup> for streamlined LTE applications on the various scenario like transportation, digital signage, mobile/remote office and etc. Featuring the leading wave2 2X2 MIMO WiFi technology and 802.11ac standard, the RG-MTFi-M520 supports access rates of up to 300Mbps for 2.4GHz and 867Mbps for 5GHz for the best-in-class user experience on the go.

In transportation environment, the RG-MTFi-M520 built-in with GPS out-of-box, providing extra value-added application for the operator to realize the fleet management in more efficient manner. In cooperated with Ruijie Managed @ Cloud Center (MACC) management platform, the operator can visualize their vehicle assets by real-time<sup>2</sup> GPS tracking with Google Map integration.

No matter transportation environment, scenario like digital signage or vending machine also require a purpose built industrial grade LTE WiFi router to solve the challenges of handling extreme physical environment and all-in-one small form factor requirement. The RG-MTFi-M520 industrial-grade design support wide range of DC power supply from the vehicle (9 to 36V DC), all power connectors, internal modules and components are shock and vibration proof, making the RG-MTFi-M520 truly delivers stable and high-performance network connectivity on the go.

To further improve the user download experience and mobile operation expenses, Ruijie RG-MTFi-M520 integrated with high-speed SSD hard disk<sup>3</sup> exclusively, allowing large volume and frequently accessed multimedia resource (such as video Ads, games, movie, etc.) to be stored locally, so that to save the mobile costs incurred from using 3G/4G network. More importantly, the integrated storage design make the user download the content from Hi-Speed Local LAN (via WiFi) instead of WAN Internet, delivering at least 8x times faster speed experience.

From sake of enhancing customer loyalty and engagement, the RG-MTFi-M520 also offers value-added marketing wifi applications empowered by Ruijie MACC-SAM accounting modules. The marketing wifi features allow either bus passenger or petron nearby digital

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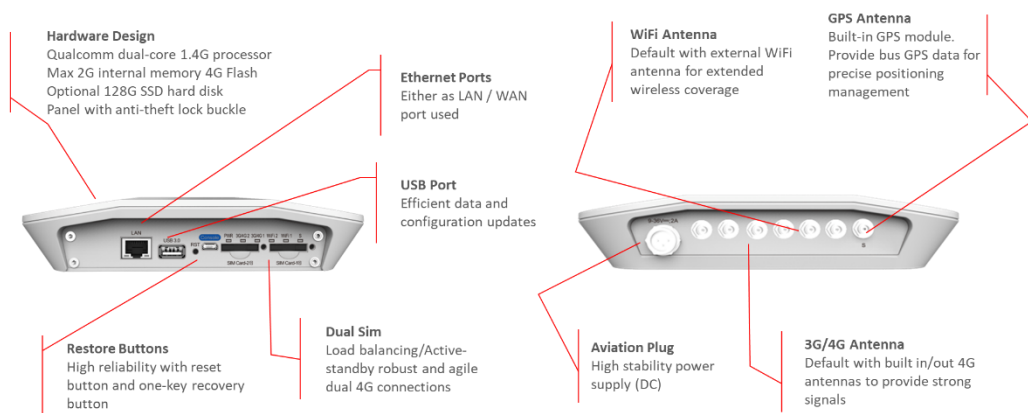
<sup>1</sup> Details vary by different models

<sup>2</sup> The minimum GPS tracking interval is 5-min

<sup>3</sup> Build in SSD is optional by different models

signage to enjoy the FREE Wi-Fi service with a customized ADS portal will be delivered when they log in to the network. MACC-SAM support various login authentications including social community (e.g. Facebook, Instagram, Twitter, etc.), voucher code, etc. More passengers or digital signage eye-catching, more business revenue.

In collaboration with Ruijie Managed @ Cloud Center (MACC) cloud management platform, which is a unified management & control center over all Ruijie scenario-based APs as well as Switches, facilitating IT to streamline large network with tens thousands devices regardless it is deployed in transportation, digital signage or even remote area offices. Zero-touch autoprovisioning feature empowered by MACC helps in rapid deployment by cutting time spents from weeks to days



Ruijie RG-MTFi-M520 Hardware Overview

### Feature Highlights:

- High-speed Dual 4G LTE (Cat4) Design
- 802.11ac Concurrent Dual-Band WiFi with External Antenna Design
- Built-In Storage for Content Caching
- GPS Fleet Tracking
- Industrial-grade Design (IP54 Compliant, Anti-Shock Proof, 70°C Working Temp)
- Centralized Cloud Platform Management
- Social Marketing with Customized Ads Portal

## 3 Product Features

### 3.1 High-speed Dual-LTE



The RG-MTFi-M520 embedded with two international 3G/4G modem with dual-SIM slots, supporting Active/Active or Active/Passive mode. In other words, 2 different mobile operators can work together for failover or load balance<sup>4</sup> applications. The design totally gets rid of the signal loss problem when one operator moves in weak 4G coverage areas. One SIM acts as the fallback network, which the switching to 3G network takes place automatically. With the adoption of the LTE solution, each SIM supports LTE Cat4 with downlink rate up to 150Mbps. A wide range of communication frequency is available, which supports most countries around the world<sup>5</sup>. The RG-MTFi-M520 offers flexible and comprehensive LTE applications suitable for various deployment

### 3.2 802.11ac Dual-Band WiFi

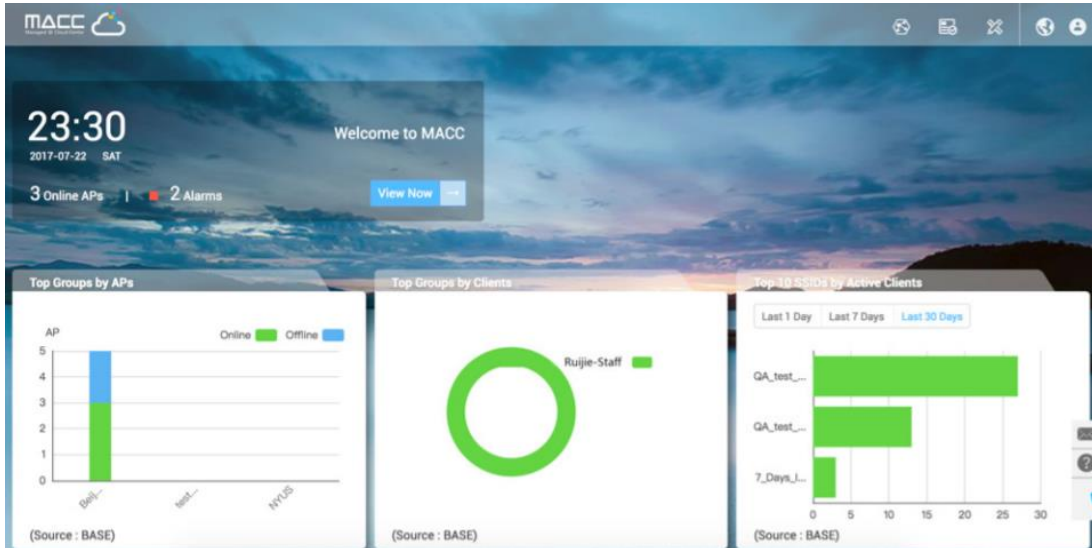


The RG-MTFi-M520 offers blazing fast wireless experience by its 2x2 MIMO WiFi design boosts the 802.11ac network performance to up to 867Mbps. Dual band 802.11ac WiFi technology on RG-MTFi-M520 is capable of handling at least 60 concurrent users on High Definition video streaming.

<sup>4</sup> Load balance software feature will be available in future release

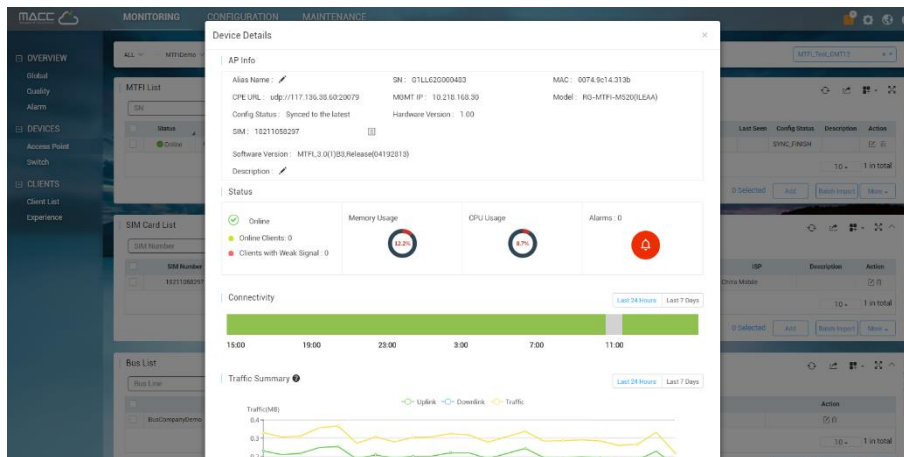
<sup>5</sup> Supported band frequencies vary for different models

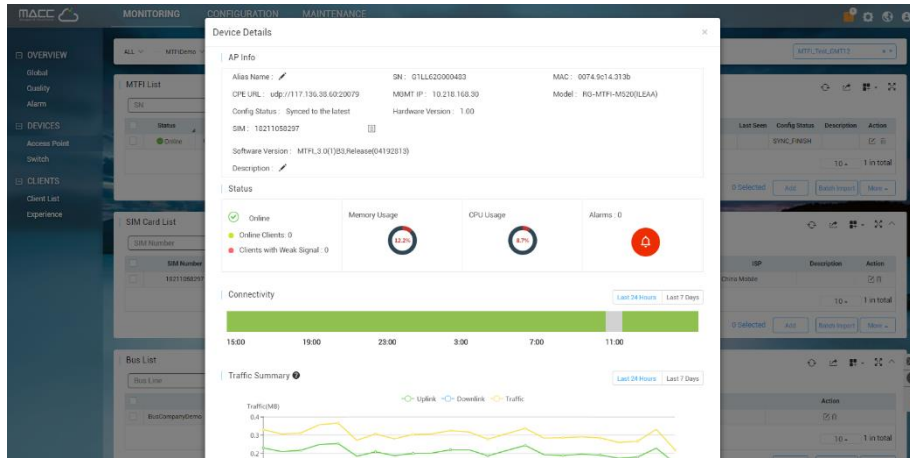
### 3.3 Centralized Management



RG-MACC Dashboard

The Ruijie RG-MACC (Managed @ Cloud Center) is a revolutionary cloud management platform which supports unified management and configuration of APs, switches and gateway devices. MACC Central Management includes configuration and firmware management for the RG-MTFi-M520. Devices monitoring and reports ensure is also available to cater for extra resilience. Minimum on-site work translates to maximized cost savings.





Detail Device Info & Traffic Analysis

### 3.4 Built-In Storage for Content Caching



CMS Integration for Local Content Caching

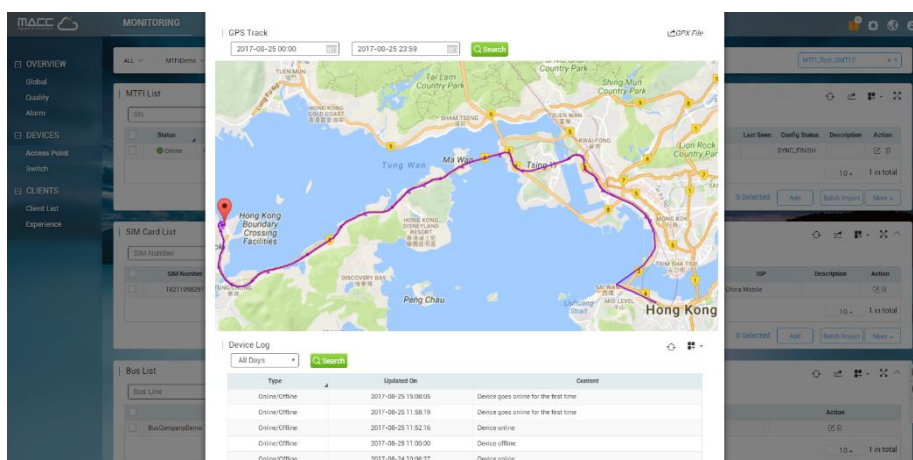
The RG-MTFi-M520 offers a built-in hard disk<sup>6</sup> for local content caching from centralized Content Management Server (CMS). Featured videos, music and popular APPs can be locally stored to eliminate 3G/4G data costs<sup>7</sup>. It minimizes the disruption media broadcasting even during internet connectivity outage. User can easily and quickly access such resources via the Wi-Fi network. The RG-MTFi-M520 brings marketing WiFi experience to a new standard.

<sup>6</sup> Model RG-MTFi-M520(ILEAA) built-in with 128G SSD

<sup>7</sup> 3<sup>rd</sup> Party Content Management System (CMS) is required



## 3.5 GPS Fleet Tracking



RG-MACC GPS Fleet Tracking Dashboard

GPS is one of the key value-added applications offered by the RG-MTFi. The service enables users to precisely master the vehicle location in real time. With Ruijie MACC integration, the RG-MTFi router can be visualized by Google Map in real-time<sup>8</sup>, the built-in GPS location tracking dashboard allows user to trace either real-time or historical vehicle location. GPS raw data can be also send to backend server for further analysis.

With this feature, fleet manager can analysis and forecast greater efficiency vehicle operation and route optimization.

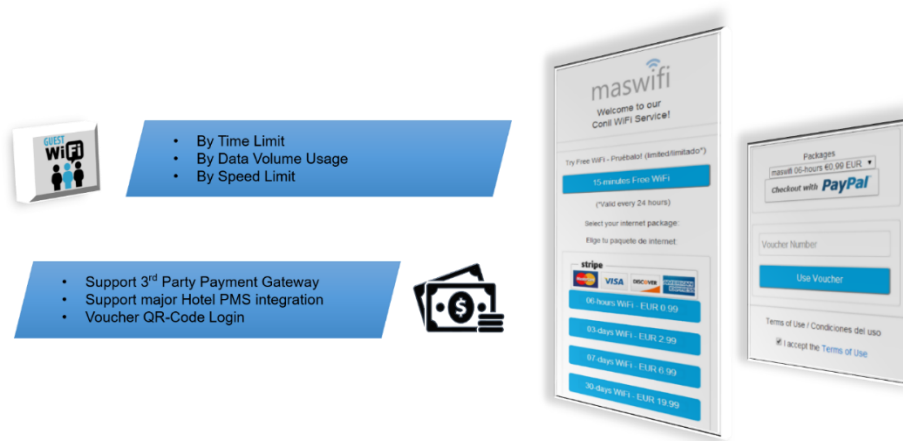
<sup>8</sup> The minimum GPS tracking interval is 5-min

### 3.6 Social Marketing



MACC-SAM Social Marketing Module

Taking advantage of RG-MACC-SAM<sup>9</sup> marketing module, RG-MTFi-M520 can support a variety of Social Authentication methods such as Facebook, Instagram, Twitter, etc. and also voucher/QR-code login as another mean for users to gain access to a free Wi-Fi. Moreover, RG-MACC-SAM can also support Social Analytics Engine, the demographic data and social interest of customers can be collected when they access to your Wi-Fi portal.



MACC-SAM 's Flexible Billing Policy

<sup>9</sup> RG-MACC-SAM is one of the solution component of Ruijie MACC Cloud Management Framework, need to be purchased separately

## 3.7 Industrial Design

The infographic features a central image of the white Ruijie RG-MTFi-M520 router. Surrounding it are several feature callouts with icons and text:

- 2.4/5 dual-band deployment:** Offers 300Mbps/867Mbps performance. The no. of concurrent users is up to 100 with no pressure for 50 users loading videos concurrently. (Icon: 2.4G and 5.8G Wi-Fi symbols)
- Operating temperature:** Ranges from -20°C to 70°C, which meets the requirement for WiFi deployment in almost all parts of China. (Icon: Thermometer)
- Vibration test:** Passed the 5M3 vibration test of a 3<sup>rd</sup> party laboratory and the Ministry of Transportation & Communications laboratory. (Icon: Smartphone)
- Dual SIM support:** Support dual module and dual card uplink for effective redundancy and connection to multiple operators. (Icon: Two SIM cards)
- IP54 certification:** Passed the IP54 test of an authoritative laboratory and comply with the fire-retardant safety standards of the Ministry of Transportation & Communications. (Icon: Umbrella)
- Uplink standards:** Changing the uplink module can support various standards such as TDD, FDD, TD-SCDMA and WCDMA. (Icon: 4G LTE logo)
- Storage:** Built-in hi-speed SSD storage hard drive provides local content caching; CMS Server Integration required. (Icon: SSD drive)
- Power supply:** Supports 9 to 36V DC broad-range power supply, power off control, ACC signal interface and power plug stabilizer. The boot delay is 10s with undervoltage and overvoltage protection. (Icon: Power supply unit)

### Purpose-built Industrial Grade Design

The RG-MTFi-M520 supports anti-shock and anti-vibration protection - both internally and externally. The anti-shock rack and vibration resistant power connector supports ACC signal detection, enabling vehicle ACC power failure alarm and AC remote data synchronization.

RG-MTFi-M520 is also certified for IP54 compliant that comes with water and dust resistance as well as a wide range operating temperature ranging from -20°C to 70°C

The RG-MTFi-M520 can withstand severe weather and environmental conditions, such as extreme temperatures, high vibrations, and shocks often encountered on buses, trains and partially outdoor environment

## 4 Technical Specifications

Model		RG-MTFi-M520(IZEAA) / RG-MTFi-M520(ILEAA)
Hardware Spec	CPU	Dual core 1.4G
	3G/4G Bands/Frequencies (MHz)	FDD-LTE: B1(2100) / B3(1800) / B5(850) / B7(2600) / B8(900) TDD-LTE B38(2600) / B39(1900) / B40(2300) / B41(TD 2500) TD-SCDMA B34(2000) / B39(1900) UMTS B1(2100) / B8(900)
	3G/4G Theoretical Speed	Support Release 9 Category 4 TDD-LTE up to 150Mbps DL, \ 50Mbps UL FDD-LTE up to 150Mbps DL, \ 50Mbps UL TD-SCDMA up to 4.2Mbps DL, \ 2.2Mbps UL DC-HSPA+ up to 42Mbps DL, 5.76Mbps UL
	SIM Card Size	Standard
	SIM Slot	2
	Embedded LTE Modem	2 (Support A/A <sup>10</sup> or A/S working mode)
	Memory	1GB: RG-MTFi-M520(IZEAA)
		1GB: RG-MTFi-M520(ILEAA)
	eMMC	4GB
	Storage	No SSD: RG-MTFi-M520(IZEAA)
		128G SSD: RG-MTFi-M520(ILEAA)
	Ethernet Port	10M/100M/1000M RJ45 Interface x1
	Management Port	Micro USB console port
	GPS	Supported
	Bluetooth	Supported
	USB3.0	1
Power Connector	M12 Aviation plug	
Power Input	9 – 36V DC broadband power, 12V/24V supported, power shut down control interface, ACC signal interface	

<sup>10</sup> Load balance software feature will be available in future release

		ACC/regular dual power supported
		Power plug anti-shake
		Anti-access protection
		10s startup delay. Under voltage protection (12v System 8.5V+/-0.5V under voltage protection, 24v System 17V+0.5V under voltage protection )
	Power consumption	19W (MAX.)
	Indicators	Top panel: sys indicator x1 Front panel: Power indicator x1 2.4G WiFi indicator x1 5G WiFi indicator x1 3G4G module status indicator x2 GPS indicator x1 LAN indicator (RJ45 integrated) x2
Button	Reset Button x1	
Sim Lock	Protected panel locked by allen screws	
WiFi Features	Supported channels	802.11a/n, 802.11b/g/n, 802.11ac supported
	WiFi RF	Dual-radio, dual-band
	MIMO	2x2, up to 300Mbps/2.4GHz, up to 867Mbps/5GHz
	WiFi Operating Bands	Support concurrent 2.4GHz and 5GHz 2.4G support 2.412GHz to 2.472GHz 5G support 5.180GHz to 5.825GHz
	Modulation	OFDM : BPSK@6/9Mbps , QPSK@12/18Mbps , 16-QAM@24Mbps , 64-QAM@48/54Mbps DSSS : DBPSK@1Mbps , DQPSK@2Mbps , and CCK@5.5/11Mbps MIMO-OFDM : BPSK , QPSK , 16QAM 、 64QAM and 256QAM
	Receiver Sensitivity	11b : -99dBm(1Mbps) , -93dBm(5.5Mbps) , -90dBm(11Mbps) 11a/g : -93dBm ( 6Mbps) , -85dBm ( 24Mbps) , -82dBm ( 36Mbps) , -77dBm ( 54Mbps) 11n : -92dBm@MCS0 , -74dBm@MCS7 , -92dBm@MCS8 , -73dBm@MCS15 11ac HT20 : -90dBm ( MCS0) , -63dBm ( MCS9) 11ac HT40 : -85dBm ( MCS0) , -60dBm ( MCS9) 11ac HT80 : -82dBm ( MCS0) , -58dBm ( MCS9)
	Transmit power	23dBm ( 2.4G) / 19dBm ( 5G) Support adjustable power levels: 100%, 75%, 50%
	Channels	802.11a/n : 5 channels

		802.11b/g/n : 13 channels
	Overall access performance	Support 802.11AC: HT40:180Mbps HT80:580Mbps 802.11/n:110Mbps
	Concurrent Users	Support 60 and more STA <sup>11</sup>
	SSID	Support 8 SSID per radio
Router Features	Routing Protocol	RIPv1/v2, OSPF <sup>12</sup>
	NAT	Support
	VPN	OpenVPN, IPsecVPN <sup>13</sup>
	LAN as WAN	Supported <sup>14</sup>
Physical Parameters	Humidity	5 ~ 95%(no condensing)
	Storage Temperature:	-40 ~ 85°C
	Operating Temperature:	-20~ 70°C
	Cooling	Heat radiation without fan
	Enclosure	Metal case High temperature resistant plastic top cover
	Dimension	200*198*42mm
	Weight	1.6KG
	Vibration Standard	GB/T4798.2-2007 5M3
	Safety Standards	IEC 60950-1, EN 60950-1
	Emission Standard	GB/T17619-1998, EN 300 386, EN 55022/55032, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11
Protection Rating	IP54	

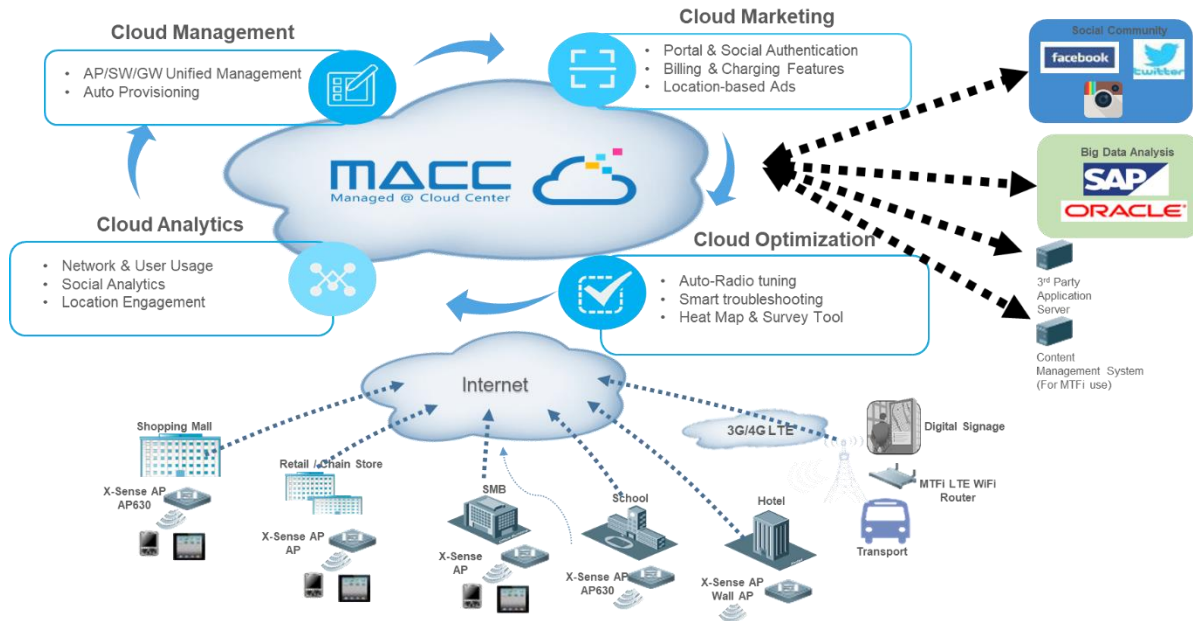
<sup>11</sup> Concurrent users number may vary in different network environments

<sup>12</sup> Will be released in the future

<sup>13</sup> Will be released in the future

<sup>14</sup> Will be released in the future

## 5 Typical Applications



The Ruijie RG-MACC (Managed @ Cloud Center) is a revolutionary cloud management platform which supports unified management and configuration of APs, switches and gateway devices, as well as value-added marketing features, location-based services (LBS), site survey, etc. The MACC is designed for education, retail chain stores, shopping malls, hotels, transportation, small and medium-sized enterprises, network operators and settings alike. The MACC is consisted of various feature modules, such as management, marketing and AAA (authentication, authorization and accounting), LBS, site survey planner, diagnostic tools, etc. The platform significantly reduces the total cost of investment while ensuring high usability of the MACC.

A seamless integrated architecture between RG-MACC and RG-MTFi offers an end-to-end solution that applicable for various deployment scenario.

## 5.1 Transportation



Bumpy journey, in-vehicle strong vibration, unreliable power source or 4G LTE signal etc. are often associated to the challenges facing by transportation fleet management that wish to offer best WiFi experience to passenger. But in reality, an unacceptable or bad WiFi experience on the ride would jeopardize passenger satisfaction or even impact customer loyalty in long run.

To overcome these challenges, Ruijie MTFi-M520 offers:

- A purposed built, industrial grade device for vibration proof as well as capable to handle extreme temperature ranging -20~ 70°C.
- Seamless integration with MACC central management provide single pane of glass for real time transportation fleet management
- Manageable 4G LTE monthly usage to avoid bill shocking or cost overrun
- Flexible external antenna is also available to ensure the MTFi-M520 can be deployed easily in various scenario deployment
- Provides redundant dual 4G LTE internet connectivity with automatic failover or load balance
- Optional local storage for multimedia broadcast content caching (requires 3<sup>rd</sup> party CMS integration)



## 5.2 Digital Signage or Vending machine



Digital signage or vending machine typically deployed in distributed and scattered location. A permanent dedicated network connection usually requires higher cost or sometime not possible due to physical environment constraint. It requires stable and secure (encrypted) internet connection to sync content from centralized content management server. Built-in with Hotspot Guest WiFi service will the added value to improve the streamline revenue or as a new way to push the Ads from the customized login portal. All-in-one small form factor network equipment is also one of the crucial factor if takes limited space into consideration.

To overcome these challenges, Ruijie MTFi-M520 offers:

- Compact unified design with LTE and WiFi router functionality ease for physical installation
- Industrial grade design (-20~ 70°C) guarantee for any extreme working environment
- Provides redundant dual 4G LTE internet connectivity with automatic failover or load balance
- Integrated dual band wireless access point can also provide free Wi-Fi as value added services to patron nearby.
- Supports VPN encryption to protect the sensitive personal information end to end. i.e. credit card information at vending machine transaction
- Local storage allow operator to integrate with 3<sup>rd</sup> party Content Management System to store or cache content locally. This feature help to optimize the usage of 4G bandwidth. In the event of internet outage, digital signage content display will not be impacted.

## 5.3 Remote Office/Branch Office (ROBO)



In setting up ad hoc mobile office or even small office in rural area, IT from headquarter usually faces the several challenges:

- Provides secure and reliable internet access to their remote employee with limited option
- No or limited IT resources to support remote office
- Business continuity

To overcome these challenges, Ruijie MTFi-M520 offers:

- Provides redundant dual 4G LTE internet connectivity with automatic failover or load balance
- Integrated MACC helps IT to streamline the zero-touch auto provisioning deployment and centralised management to achieve Zero Branch IT.
- Supports strong VPN feature to ensure the data integrity between ROBO and HQ

## 6 Ordering Information

Package Content	Device	Description	Quantity per Package
	RG-MTFi-M520(IZEAA)	Industrial-grade Mobile LTE WiFi Router, Dual-LTE modem (used for most Asian countries), Dual-SIM slot, Concurrent Dual-Band 11ac Wi-Fi, 1GE Ethernet LAN/WAN, 1G RAM, External antennas, GPS, DC Power	1
	<b>Accessories</b>		
	Power cord	In-vehicle Power Cable, 3m length, 3 male pin connectors	1
	Mounting kit	Standard mounting brackets package	1
	LTE antenna	1.5m length, one side 3M adhesive	3
	WiFi antenna	1.5m length, one side 3M adhesive	2
	Bluetooth antenna	1.5m length, one side 3M adhesive	1
	GPS antenna	1.5m length, one side 3M adhesive	1

Package Content	Device	Description	Quantity per Package
	RG-MTFi-M520(ILEAA)	Industrial-grade Mobile LTE WiFi Router, Dual-LTE modem (used for most Asian countries), Dual-SIM slot, Concurrent Dual-Band 11ac Wi-Fi, 1GE Ethernet LAN/WAN, 1G RAM, 128G SSD HDD, External antennas, GPS, DC Power	1
	<b>Accessories</b>		
	Power cord	In-vehicle Power Cable, 3m length, 3 male pin connectors	1
	Mounting kit	Standard mounting brackets package	1
	LTE antenna	1.5m length, one side 3M adhesive	3
	WiFi antenna	1.5m length, one side 3M adhesive	2
	Bluetooth antenna	1.5m length, one side 3M adhesive	1
	GPS antenna	1.5m length, one side 3M adhesive	1

## 7 More Information

For more information about the Ruijie RG-MTFi-M520 Vehicle Wi-Fi Device, please visit <http://www.ruijienetworks.com> or contact your local Ruijie sales representative.

