GAINSTRONG
Minibox-V2-EC25 Spec

Specification Version 1.0.0

Author：James

November 3, 2017

Rev.	Date	Contents of Revision Change	Remark
1.0.0	2017-11-03	First Initial	James

1.PRODUCT DESCRIPTION

The Minibox-V2-EC25 is an exquisite portable and small wireless router which designed for those who use mobile devices like smart phone, PADs, notebook to surf the internet.The Router has 2 FE RJ45 ports which support both wired connection and wireless connection at the same time.it allows users not only able to share their internet by wired connection but also wireless connection.

The MINIBOX-V2-EC25 Wi-Fi link is a 1T1R 802.11b/g/n solution. The Wi-Fi link is highly integrated, and includes an energy efficient on-board power amplifier and LNA. For the 2.4 GHz band, RF switches are also integrated. The MINIBOX-V2-EC25 Wi-Fi link is optimized for low system cost, and minimizes the number and cost of any components required to achieve a reliable Wi-Fi link.
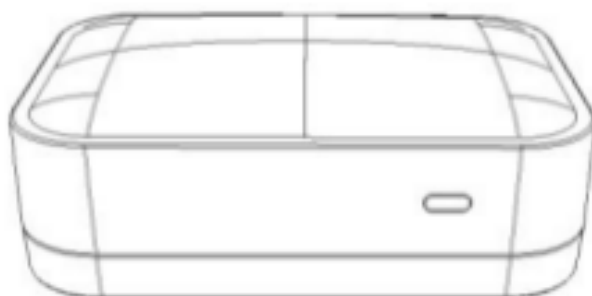
EC25 series is Quectel's new generation of LTE category-4 module, optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 10 LTE technology, it delivers 150Mbps downlink and 50Mbps uplink data rates and is fallback compatible with Quectel UMTS/HSPA+ UC20 module and multi-mode LTE EC20 module in the compact and unified form factor, providing a flexible and scalable platform for mi-grating from UMTS/HSPA+ to LTE. EC25 contains 4 variants: EC25-AUT, EC25-V, EC25-A, and EC25-E. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, which ensures that it can be connected even in re-mote areas devoid of 4G or 3G coverage.

EC25 supports multiple-input multiple-output (MIMO) technolo-gy, a cutting edge antenna technology capable of transmitting multiple data streams on multiple transmitters to multiple re-ceivers. The antennas at each end of the communication cir-cuit are combined to minimize errors and optimize data speed. The module also combines high-speed wireless connectivity with embedded multi-constellation high-sensitivity GNSS re-ceiver.
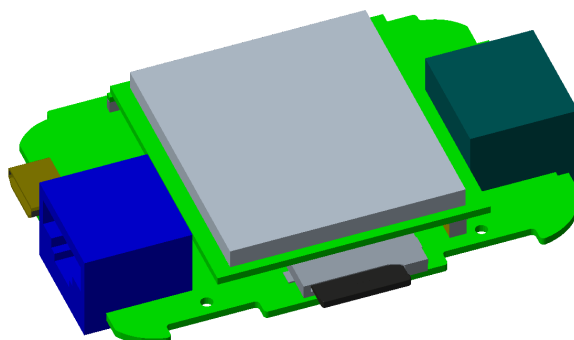
A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB drivers for Windows XP, Windows Vista, Windows 7, Windows 8/8.1, Linux, Android/ eCall) extend the applicability of the module to a wide range of M2M applications such as CPE, router, data card, rugged tab-let, automotive, security and industry PDA.

2.4GHz WiFi(MT7688AN) + 4G LTE(EC25)

Sketch Picture

Internal Structure Diagram

2. Features

2.1 Wi-Fi Link features:

IEEE 802.11n, Single Stream 1x1

MT7688AN with 580 MHZ MIPS 24KEc

B/G/N 2.4 GHz

Integrated PA, LNA

Built-in smart omnidirectional antenna

Data rates up to 150 Mbps

Powered through a micro USB port by an external power adapter or connection to a computer

Supports WEP, WPA/WPA2,WPA-PSK/WPA2-PSK encryptions

2.2 System cost optimization

Highly-Integrated Wi-Fi solution incorporating a single crystal, antenna, and the matching components ,two 10/100Mbps port,1USB port,1Reset Button,1Micro USB(5V/0.5A Input)

Integrated IPv4/IPv6 TCP/IP Stack

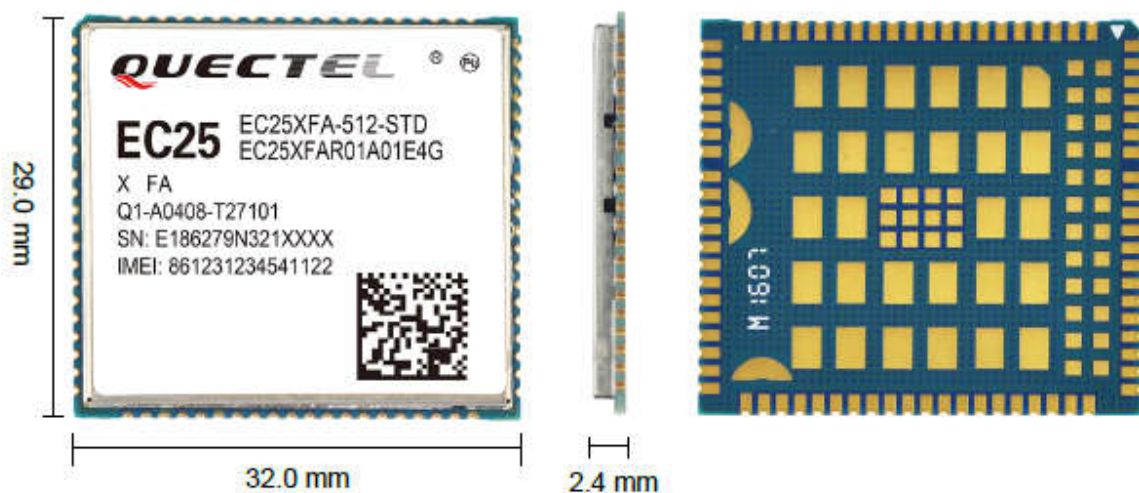Integrated Network services such as HTTP, DNS, FTP

DDR2:64MB

Flash:16M/8MB optional

Dimensions: 64mm x 44.5mm x22.3mm(L x W x H)

2.3 4G LTE(EC25) General Features

Frequency Bands	EC25-E	FDD LTE: B1/B3/B5/B7/B8/B20 TDD LTE: B38/B40/B41 WCDMA: B1/B5/B8 GSM: 900/1800
	EC25-V	FDD LTE: B4/B13
	EC25-A	FDD LTE: B2/B4/B12 WCDMA: B2/B4/B5
	EC25-AUT	FDD LTE: B1/B3/B5/B7/B28 WCDMA: B1/B5
LTE Version	3GPP E-UTRA Release 10	
Bandwidth	1.4/3/5/10/15/20MHz	
Antenna	DL MIMO, supports Rx-diversity	
Supply Voltage Range	3.3V~ 4.3V, 3.8V Typ.	
Operation Temperature	-40°C ~ +85°C	
Dimensions	32.0mm×29.0mm×2.4mm	
Package	LCC	
Weight	Approx. 4.6g	
Control via AT Commands	3GPP TS27.007 and enhanced AT Commands	

2.4 4G LTE(EC25) Specifications

	LTE	LTE-FDD Max 150Mbps (DL) Max 50Mbps (UL)
		LTE-TDD Max 130Mbps (DL) Max 35Mbps (UL)
	DC-HSPA+	Max 42Mbps (DL) Max 5.76Mbps (UL)
Data	UMTS	Max 384Kbps (DL) Max 384Kbps (UL)
	TD-SCDMA	Max 4.2Mbps (DL) Max 2.2Mbps (UL)
	EDGE	Max 236.8Kbps (DL) Max 236.8Kbps (UL)
	GPRS	Max 85.6Kbps (DL) Max 85.6Kbps (UL)
Voice	Speech Codec Modes	HR, FR, EFR, AMR, AMR-WB
eCall *	Accident, Emergency Services	
VoLTE	Digital Audio and VoLTE (Voice over LTE) (Optional)	
Protocols	TCP/UDP/PPP/FTP*/HTTP*/SMTP*/MMS*/NTP/ PING/DTMF*/FILE*/CMUX*/QMI	

3.PRODUCT SPECIFICATIONS

Main chipset :WiFi Single Chip: MT7688A

Functional Specifications

Standards	EEE 802.11 b/g/n
Bus Interface	UART ; SPI ; USB2.0
Data Rate	11n: Up to 135Mbps(dynamic) 11g: Up to 54Mbps(dynamic) 11b: Up to 11Mbps(dynamic)
Modulation Techniques	802.11b: CCK, DQPSK, DBPSK 802.11g: 64 QAM, 16 QAM, QPSK, BPSK 802.11n: 64 QAM, 16 QAM, QPSK, BPSK
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode Software AP WiFi Direct
Frequency Range	2.400GHz ~ 2.4835 GHz
Security	WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i

4.Power Supply DC Characteristics

DC Characteristics

model	Voltage	Current ption (linking)
Minibox V2-EC25	5V 2A	Power consumption (surf the Internet or watching a movie)

5.WiFi Specifications

1) RF Characteristics for IEEE802.11b（11Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11b			
Mode	CCK 11 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX（per≤85 dBm@8%)	-85 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level（17±2 dBm)		17		dBm
EVM (≤-15)		-15		dB

2) RF Characteristics for IEEE802.11g（54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM 54 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per≤70 dBm@10%)	-70 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level（15±2dBm)		15		dBm
EVM (≤-28)		-28		dB

3) RF Characteristics for IEEE802.11n (HT20_MCS7)

Items	Contents			
Specification	IEEE802.11n (BW20_MCS7)			
Mode	OFDM 65 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per≤65 dBm@10%)	-65 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level（15±2 dBm)		15		dBm
EVM (≤-28)		-28		dB

4) RF Characteristics for IEEE802.11n (HT40_MCS7)

Items	Contents
Specification	IEEE802.11n (BW40_MCS7)
Mode	OFDM 135 Mbps
Channel frequency	2412 ~ 2484 MHz
RX (per≤65 dBm@10%)	-65 dBm

TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (14±2 dBm)		14		dBm
EVM (≤-28)		-28		dB

6.Mechanical

Dimensions (mm)	Length	Width	Height
	64 (Tolerance:±0.2mm)	44.5 (Tolerance:±0.2mm)	22.3 (Tolerance:±0.2mm)

7.ENVIRONAMENT

Certification	CE FCC, RoHS,
System Requirements	Microsoft® Windows® 98SE, NT, 2000, XP, Vista™ or Windows 7, MAC® OS, NetWare®, UNIX® or Linux
Environment	Operating Temperature: 0℃~40℃ (32℉~10℉)
	Storage Temperature: - 40℃~70℃ (-40℉~158℉) -Operating Humidity: 10%~90%
	non-condensing Storage Humidity: 5%~90% non-condensing