CHEN ER FT07

LTE Cat M1 & Cat NB1 & EGPRS Module

FT is a series of LTE Cat M1/Cat NB1/EGPRS module offering a maximum data rate of 375Kbps downlink and 375Kbps uplink. It features ultra-low power consumption, and provides pin-to-pin compatibility with Chen Er LTE module EG91/EG95, Cat NB1 (NB-IoT) module BC95, UMTS/HSPA module UG95/UG96 and GSM/GPRS module M95.

With a cost-effective SMT form factor of 26.5mm × 22.5mm × 2.3mm and high integration level, FT enables integrators and developers to easily design their applications and take advantage from the module's low power consumption and mechanical intensity. Its advanced LGA package allows fully automated manufacturing for high-volume applications.

A rich set of Internet protocols, industry-standard interfaces (USB/UART/I2C/Status Indicator) and abundant functionalities (USB drivers for Windows 7/8/8.1/10, Linux and Android) extend the applicability of the module to a wide range of M2M applications such as wireless POS, smart metering, tracking, etc.

Key Benefits

- LTE Cat M1/Cat NB1/EGPRS module with ultra-low power consumption
- Compact SMT form factor ideal for size-constrained applications with tight space
- Easy migration from Quectel GSM/GPRS, UMTS/HSPA and LTE modules
- Super slim profile in LGA package
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- Robust mounting and interfaces

LTE Cat M1 & Cat NB1 & EGPRS

LGA Package


Compact Size


Embedded Abundant Protocols

DFOTA


USB 2.0 High Speed Interface


USB Drivers

Quectel Enhanced AT Commands

Variants for the Global

FT

Cat M1/Cat NB1:

LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28

LTE TDD: B39 (For Cat M1 Only)

EGPRS:

850/900/1800/1900MHz

FT-M

Cat M1 Only:

LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25①/B26*/B28

LTE TDD: B39

Data

Cat M1:

Max. 375Kbps (DL), Max. 375Kbps (UL)

Cat NB1:

Max. 32Kbps (DL), Max. 70Kbps (UL)

EDGE:

Max. 296Kbps (DL), Max. 236.8Kbps (UL)

GPRS:

Max. 107Kbps (DL), Max. 85.6Kbps (UL)

Voice

VoLTE (For Cat M1 Only. Support Realtek ALC 5616 /NAU8814 Codec by Default Firmware)

SMS

Point-to-point MO and MT

SMS Cell Broadcast

Text and PDU Mode

Interfaces

USB 2.0 × 1 (With High Speed up to 480Mbps)

UART × 3

PCM × 1

ADC × 2 (15 bits)

GPIO × 2 (I2C and UART3 can be re-configured as extra 4 GPIOs)

(U)SIM × 1

NETLIGHT × 1 (For Network Status Indication)

STATUS × 1 (For Power ON/OFF Indication)

Main and GNSS Antenna Interfaces

Enhanced Features

GNSS (Optional):

GPS, GLONASS, BeiDou/Compass, Galileo, QZSS

Firmware Upgrade:

via USB interface

DFOTA:

Delta Firmware Upgrade Over the Air

Processor:

ARM A7 Processor, with 3MB Flash and 3MB RAM Available for Users

QuecLocator™*:

Supports Cell ID, Wi-Fi and Hybrid (Cell ID+Wi-Fi) Positioning Functions

Electrical Characteristics

Output Power:

Max. Power: 23dBm

Consumption @LTE Cat M1 (Typical):

Power Saving Mode: 10uA

Idle State: 15mA @DRX=1.28s

15mA @e-I-DRX=40.96s

Sleep State: 1.5mA @DRX=1.28s

1.2mA @e-I-DRX=40.96s

LTE Connected Mode (Avg.):

128mA @0dBm

140mA @10dBm

205mA @23dBm

Consumption @LTE Cat NB1 (Typical):

Power Saving Mode: 10uA

Idle State: 15mA @DRX=1.28s

15mA @e-I-DRX=40.96s

Sleep State: 1.96mA @DRX=1.28s

1.1mA @e-I-DRX=40.96s

LTE Connected Mode (Avg.):

96mA @0dBm

110mA @10dBm

223mA @23dBm

Sensitivity:

-107dBm @Cat M1, 1.4MHz Bandwidth, CE Mode A

-113dBm @Cat NB1, CE Level 0

Software Features

USB Serial Driver:

Windows 7/8/8.1/10, Windows CE 5.0/6.0/7.0, Linux 2.6/3.x/4.1~4.14, Android 4.x/5.x/6.x/7.x/8.x

RIL Driver: Android 4.x/5.x/6.x/7.x/8.x

NDIS Driver: Windows 7/8/8.1/10

ECM Driver*: Linux 2.6/3.x/4.1~4.14

Gobinet Driver: Linux 2.6/3.x/4.1~4.14

QMI_WWAN Driver:

Linux 3.x(3.4 or later)/4.1~4.14

Protocols:

PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT

General Features

3GPP E-UTRA Release 13

Temperature Range: -40°C ~ +85°C

Dimensions: 26.5mm × 22.5mm × 2.3mm

Approx. 3.1g

LGA Package

Supply Voltage: 3.3V~4.3V, 3.8V Typ.

3GPP TS27.007, 3GPP TS 27.005 and Quectel Enhanced AT Commands

Approvals

RoHS Compliant

GCF/Vodafone (Global)

CE/Deutsche Telekom (Europe)

AT&T/FCC/PTCRB/Verizon/T-Mobile*/Sprint* (North America)

RCM/Telstra (Australia)

IC/Telus/BELL* (Canada)

Telefonica (Spain)

JATE/KDDI/SoftBank/TELEC/DOCOMO* (Japan)

KC/SKT/LGU+* (Korea)

IFETEL (Mexico)

IMDA (Singapore)

NCC (Taiwan)

CCC (China)

① LTE B25 will be supported on FT with R1.2 hardware version.

* Under Developme

<Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

2.2 List of applicable FCC rules

This module has been granted modular approval as below listed FCC rule parts.

- FCC Rule parts 22H, 24E, 27

2.3 Summarize the specific operational use conditions

- The OEM integrator should use equivalent antennas which is the same type and equal or less gain then an antenna listed in 2.7 in this instruction manual.

2.4 Limited module procedures

- N/A

2.5 Trace antenna designs

- N/A

2.6 RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

- The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.
- Mobile use

As long as the three conditions above are met, further transmitter testing will not be required.

OEM integrators should provide the minimum separation distance to end users in their endproduct manuals.

2.7 Antennas list

This module is certified with the following integrated antenna.

- Type: PCB Pattern Anttena Peak gain (dBi): 4.0

Any new antenna type, higher gain than listed antenna should be met the requirements of FCC rule 15.203 and 2.1043 as permissive change procedure.

2.8 Label and compliance information

End Product Labeling

The module is labeled with its own FCC ID. If the FCC ID are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:

"Contains FCC ID: 2AHLN201906FTX"

2.9 Information on test modes and additional testing requirements

- OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

RF test mode in high/mid/low channels
Base Station Simulator (R&S CMW500)
what power level
Base Station Simulator (R&S CMW500)
Power level
0.184W~0.249W

2.10 Additional testing, Part 15 Subpart B disclaimer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

Please note that For a Class B or Class A digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in *§15.105 Information to the user* or such similar statement and place it in a prominent location in the text of host product manual. Original texts as following:

For Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

For Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.