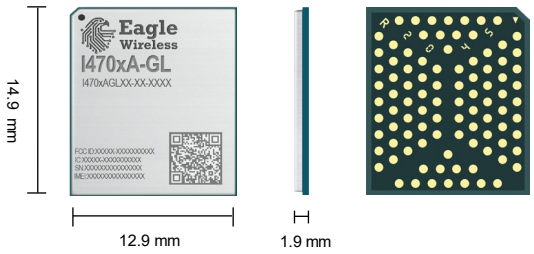
Eagle I470xA-GL

Ultra-compact
LTE Cat M1/ NB1/ NB2 Module



The I470xA-GL is a 5G-ready, ultra-compact LPWA module fully compliant with 3GPP E-UTRA Release 13/ 14 standards. It supports both LTE Cat M1 and Cat NB1/NB2, delivering ultra-low power consumption through integrated RAM and flash that significantly reduce power consumption in power-saving modes such as PSM and e-I-DRX. The module also incorporates a built-in GNSS engine with dual support for GPS and GLONASS positioning systems. I470xA-GL comes in two variants: I4700A-GL and I4702A-GL.

With integrated security elements (ISE), the I4700A-GL provides robust hardware-based security. Its ultra-compact SMT form factor (14.9 mm × 12.9 mm × 1.9 mm) and high level of integration allow developers and integrators to design applications easily, benefiting from both low power consumption and a miniaturized footprint. The module's advanced LGA package supports fully automated manufacturing, making it ideal for high-volume applications.

The I470xA-GL module supports an extensive range of internet protocols, industry-standard interfaces, and integrated functionalities, making it well-suited for diverse M2M and IoT applications—including wireless POS systems, smart metering, asset tracking, wearable devices, and beyond.

Key Features

- Extremely compact LTE Cat M1/ NB1/ NB2 module with ultra-low power consumption
- Super slim profile in LGA package
- Embedded with abundant Internet service protocols
- Support DFOTA
- Support second development of embedded applications, ARM Cortex-M4 MCU, running FreeRTOS
- Supports Open Solution to simplify the development of embedded applications
- A rich set of external interfaces (including RF control interfaces) that ensure convenient applications
- Fast time-to-market: reference designs, evaluation tools and timely technical support minimize time and efforts in design and development

LTE Cat M1 & Cat NB1/ NB2

LGA Package

Super Compact Size

Abundant Protocols Embedded

DFOTA

USB 2.0 Interface

Ultra-low Power Consumption

Enhanced AT Commands

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Eagle I470xA-GL

LTE Cat M1/ NB1/ NB2			I4700A-GL	I4702A-GL
Region/ Operator			Global	Global
Dimensions (mm)			14.9 × 12.9 × 1.9	14.9 × 12.9 × 1.9
Package			LGA	LGA
Temperature Range				
Operating Temperature			-35 °C to +75 °C	-35 °C to +75 °C
Extended Temperature			-40 °C to +85 °C	-40 °C to +85 °C
Frequency Bands				
LTE-FDD			Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66	
			Cat NB1/ NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 17/ 18/ 19/ 20/ 25/ 28/ 66	
Data Rate (Max.)				
LTE (kbps)	**Rel-13**	**Cat M1**	300 (DL)/ 375 (UL)	300 (DL)/ 375 (UL)
		Cat NB1	27.2 (DL)/ 62.5 (UL)	27.2 (DL)/ 62.5 (UL)
	Rel-14	**Cat M1**	588 (DL)/ 1119 (UL)	588 (DL)/ 1119 (UL)
		Cat NB2	127 (DL)/ 158 (UL)	127 (DL)/ 158 (UL)
Certifications				
Carrier*			**Europe:** Vodafone/ Deutsche Telekom/ Orange **America:** Verizon/ AT&T/ T-Mobile **Canada:** Telus **South Korea:** KT/ SKT/ LGU+ **Australia**: Telstra **Japan:** NTT DOCOMO/ KDDI/ Rakuten	**Europe:** Deutsche Telekom **America:** AT&T **South Korea:** KT/ LGU+ **Australia:** Telstra
Regulatory/ Conformance*			**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **South Korea:** KC **Japan:** JATE/ TELEC **Australia/New Zealand:** RCM **South Africa**: ICASA	**Global:** GCF **Europe:** CE **North America:** PTCRB **America:** FCC **Canada:** IC **South Korea:** KC **Japan:** JATE/ TELEC **Australia/New Zealand:** RCM
Others			RoHS	RoHS
Interfaces				
USB 2.0			× 1 (Full speed only)	× 1 (Full speed only)
UART			× 3	Max. × 2
I2C			-	Max. × 2
SPI			-	Max. × 2 (1 for master only, 1 for master/slave)
ADC			× 2	Max. × 2
USIM			× 1 (Supports 1.8 V only)	× 1 (Supports 1.8 V only)
GPIO			× 7	Max. × 15
GRFC			× 2	× 2
NET_STATUS			× 1 (For network status indication)	× 1 (For network status indication)
STATUS			× 1 (For power on/ off indication)	× 1 (For power on/ off indication)
Antenna			× 2 (For the main antenna and GNSS antenna, respectively)	× 2 (For the main antenna and GNSS antenna, respectively)
SMS				
Short Message Service			Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode	Point-to-point MO and MT SMS Cell Broadcast Text and PDU Mode
Enhanced Features				
GNSS			GPS/ GLONASS	GPS/ GLONASS
DFOTA			Supported	Supported
Open Solution			-	Supported

Note:
*: Under development/ planning/ in progress.

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Eagle I470xA-GL

LTE Cat M1/NB1/NB2	I4700A-GL	I4702A-GL
Software Features		
3GPP	3GPP E-UTRA Release 13/ 14	3GPP E-UTRA Release 13/ 14
AT Commands	*3GPP TS 27.007* *3GPP TS 27.005* Enhanced AT Commands	*3GPP TS 27.007* *3GPP TS 27.005* Enhanced AT Commands
iSIM	-	-
Protocols	PPP/ TCP/ UDP/ SSL/ DTLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ NIDD/ MQTT(S)/ NTP/ LwM2M/ CoAP	PPP/ TCP/ UDP/ SSL/ DTLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ NIDD/ MQTT(S)/ NTP/ LwM2M/ CoAP
Firmware Upgrade	UART/ DFOTA/ USB*	UART/ DFOTA/ USB*
Electrical Features		
Output Power (Max.)	23 dBm	23 dBm
Supply Voltage Range	**VBAT_BB:** 2.2–4.35 V, typ. 3.3 V **VBAT_RF:** 3.1–4.2 V, typ. 3.3 V	**VBAT_BB:** 2.2–4.35 V, typ. 3.3 V **VBAT_RF:** 3.1–4.2 V, typ. 3.3 V
Power Consumption (Typical)	**Power Saving Mode:** 1.4 µA **Rock Bottom:** 45 µA **Sleep Mode:** Cat M1: • 1.1 mA @ DRX = 1.28 s • 0.06 mA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s • 0.05 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: • 2.2 mA @ DRX = 1.28 s • 0.16 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.12 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Idle Mode:** Cat M1: • 16.5 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: • 17.0 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Active Mode (GNSS off):** Cat M1: 192.7 mA @ 23 dBm Cat NB1: 184.3 mA @ 23 dBm	**Power Saving Mode + Open Solution @ Shutdown mode:** 1.4 µA **Rock Bottom:** Open Solution @ Shutdown mode: 43 µA Open Solution @ Standby mode: 45 µA Open Solution @ Stop mode: 0.68 mA **Sleep Mode + Open Solution @ Standby mode:** Cat M1: • 1.1 mA @ DRX = 1.28 s • 0.06 mA @ e-I-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s • 0.05 mA @ e-I-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s Cat NB1: • 2.2 mA @ DRX = 1.28 s • 0.16 mA @ e-I-DRX = 40.96 s; PTW = 2.56 s; DRX = 1.28 s • 0.12 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Idle Mode + Open Solution @ Standby mode:** Cat M1: • 16.5 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s Cat NB1: • 17.0 mA @ DRX = 1.28 s • 16.0 mA @ e-I-DRX = 81.92 s; PTW = 2.56 s; DRX = 1.28 s **Active Mode (GNSS disabled):** Cat M1: 192.7 mA @ 23 dBm Cat NB1: 184.3 mA @ 23 dBm

Note:
*: Under development/ planning/ in progress.

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