Product summary

LARA-R2 series

Single or multi-mode LTE Cat 1 modules with positioning capability

Standard

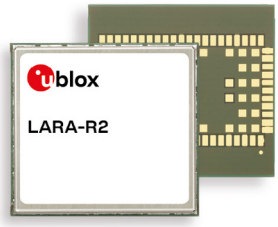
Professional

Automotive

Region-specific LTE Cat 1 modules with 2G or 3G fallback

- Voice support via VoLTE or CSFB
- Cellular location service and hybrid positioning
- Small, compact LARA LGA form factor for easy manufacturing
- Easy migration between u-blox 2G, 3G and 4G modules

24.0 × 26.0 × 2.6 mm



Product description

LARA-R2 series modules support multi-band LTE-FDD with seven regional variants. Each variant is designed for specific regional market requirements to allow development of cost-efficient yet feature-rich products. The variants with 2G or 3G fallback provide connectivity in cases where LTE coverage is not yet available. This allows seamless operation during technology transition.

With many interface options and an integrated IP stack, the modules are designed to support a wide range of data-and-voice-centric applications. The unique combination of performance, security and flexibility make them ideal for medium speed M2M applications, such as smart energy gateways, remote access video cameras, digital signage, telehealth and telematics.

LARA-R2 modules support Voice over LTE (VoLTE) or CSFB voice service for applications such as security and surveillance systems.

Thanks to u-blox's CellLocate® technology, LARA-R2 offers cost-effective location estimation based on information from surrounding cellular base stations. A positioning solution with CellLocate and a u-blox GNSS module provides redundancy and accuracy that can be beneficial for numerous applications.

The temperature range of –40 °C to +85 °C guarantees operation in harsh environments and in very compact designs.

The ultra-compact LGA package enables straightforward automated manufacturing. The LARA form factor follows the u-blox nested design principle in order to maintain design compatibility between modules supporting different cellular technologies. It is compatible with the SARA, LISA and TOBY module families. This allow customers to easily upgrade their products or develop new variants using the same footprint, thus maximizing investments, simplifying logistics, and enabling a very short time-to-market.

LARA-R2 modules are manufactured in ISO/TS 16949 certified sites, with the highest production standards and the highest quality and reliability. Each module is fully tested and inspected during production. Modules are qualified according to ISO 16750 – for systems installed in vehicles.

USB drivers and RIL software for Android are free of charge.

	LARA-R202	LARA-R203	LARA-R204	LARA-R211	LARA-R281	LARA-R220	LARA-R280
Grade							
Automotive							
Professional	•	•	•	•	•	•	•
Standard							
Regions							
	North America			EMEA	EMEA	Japan	APAC
Access technology							
GSM/GPRS bands				D1			
UMTS/HSPA [MHz]	850, 1900				2100		2100
LTE bands	2, 4, 5, 12	2, 4, 12	4, 13	3, 7, 20	1, 3, 8, 20, 28	1, 19	3, 8, 28
Data rate	Cat 1	Cat 1	Cat 1	Cat 1	Cat 1	Cat 1	Cat 1
Positioning							
GNSS via modem §	•	•		•	•	•	•
AssistNow software	•	•		•	•	•	•
CellLocate®	•	•		•	•	•	•
Interfaces							
UART	1	1	1	2	1	1	1
USB	1	1	1	1	1	1	1
HSIC	H	H	H	H	H	H	H
DDC (I2C)	1	1	1	1	1	1	1
SDIO (master)	H	H	H	H	H	H	H
GPIO	9	9	9	9	9	9	9
Audio							
Digital audio	1	1		1	1		1
Features							
VoLTE	v	v		•	c		c
Antenna detection	•	•	•	•	•	•	•
Embedded TCP/UDP	•	•	•	•	•	•	•
Embedded FTP/HTTP	•	•	•	•	•	•	•
Embedded TLS 1.2	•	•	•	•	•	•	•
FW update via serial	•	•	•	•	•	•	•
FOTA	•	•	•	•	•	•	•
Rx diversity	•	•	•	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•	•	•	•

Cat 1 = LTE Cat 1 (10 Mb/s DL, 5 Mb/s UL)
§ = external GNSS can be controlled via the modem
D1 = Dual-band 900/1800 MHz
v = VoLTE available and AT&T certified

□ = Available in future FW
H = Hardware-ready
c = CSFB only

LARA-R2 series

C

Features

LTE	Cat 1 (10 Mbit/s DL, 5 Mbit/s UL) 3GPP Release 9 FDD bands: – LARA-R202: 2, 4, 5, 12 (North America) – LARA-R203: 2, 4, 12 (North America) – LARA-R204: 4, 13 (North America) – LARA-R211: 3, 7, 20 (EMEA) – LARA-R281: 1, 3, 8, 20, 28 (EMEA) – LARA-R220: 1, 19 (Japan) – LARA-R280: 3, 8, 28 (APAC) All channel bandwidths: 1.4 - 20 MHz Rx diversity Power saving mode for low power consumption
UMTS	HSDPA category 8, HSUPA category 6 Bands (in MHz): – LARA-R202: 850, 1900 – LARA-R280, LARA-R281: 2100
GSM	GPRS/EDGE multi-slot class 33 Bands (in MHz): – LARA-R211: E-GSM 900 / DCS 1800
SMS	MT/MO PDU/Text mode SMS over IMS and via SMS-C
Voice	VoLTE or CSFB Codec: HR/FR/EFR/AMR/AMR-WB Echo cancelation & noise reduction

Software features

Protocols	Dual stack IPv4 / IPv6 Embedded TCP/IP, UDP/IP HTTP/HTTPS, FTP/FTPS eSIM and Bearer Independent Protocol
GNSS Interfaces	Direct access to u-blox M8 via LARA-R2 AssistNow software for fastest GNSS Time-To-First-Fix CellLocate® & hybrid positioning
Firmware upgrade	Via UART and USB FOTA (firmware upgrade over the air)

Interfaces

Serial	1 UART (LARA-R211 supports 2 x UART) 1 USB 2.0 (high-speed, 480 Mbit/s) 1 HSIC [1] 1 SDIO [1] 1 DDC (I2C)
GPIO	Up to 9 configurable GPIOs
(U)SIM	Supports 1.8 V and 3.0 V, SIM toolkit
Audio	1 digital

Electrical data

Power supply	3.8 V nominal, range 3.3 V to 4.4 V Extended range 3.0 V to 4.5 V Extended range 2.8 V to 4.5 V (LARA-R211)

Package

100 pin LGA (Land Grid Array): 24.0 x 26.0 x 2.6 mm, < 4 g

Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C (extended range)

RoHS compliant (lead-free)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

Security

Transport Layer Security (TLS 1.2)

Jamming detection [1]

1 = Available in future FW version

Certifications and approvals

LARA-R202-02B	PTCRB, FCC, ISED, AT&T [2], T-Mobile, Rogers, Telus
LARA-R202-82B	PTCRB, FCC, ISED, AT&T [2], US. Cellular, T-Mobile
LARA-R203	PTCRB, FCC, ISED, AT& T [2], T-Mobile, Rogers
LARA-R204	GCF, FCC, ISED, Verizon
LARA-R211	GCF, RED, Vodafone, Deutsche Telekom
LARA-R281	RED
LARA-R220	Giteki, NTT docomo
LARA-R280	NCC, RCM

2 = VoLTE is available and AT&T certified

Support products

EVK-R2	Evaluation kits for LARA-R2 series
RIL software	Available for Android 9.0 and previous versions
USB driver	Available for Windows 7, 8, 10 and for Embedded Windows 7.x, 8.x, 10.x

Product variants

LARA-R202	LTE Cat 1 module with 3G fallback for N. America. LTE bands 2, 4, 5, 12
LARA-R203	LTE Cat 1 module for North America. LTE bands 2, 4, 12
LARA-R204	LTE Cat 1 module for North America. LTE bands 4, 13
LARA-R211	LTE Cat 1 module with 2G fallback for EMEA. LTE bands 3, 7, 20
LARA-R281	LTE Cat 1 module with 3G fallback for EMEA. LTE bands 1, 3, 8, 20, 28
LARA-R220	LTE Cat 1 module for Japan /NTT docomo. LTE bands 1, 19
LARA-R280	LTE Cat 1 module with 3G fallback for APAC. LTE bands 3, 8, 28

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.