

LARA-R2 series



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

Voice support via VoLTE or CSFB

- Cellular location service and Hybrid Positioning
- Available in multi and single-mode LTE Cat 1 configurations
- Easy migration between u-blox 2G, 3G and 4G modules
- Small, compact LARA LGA form factor for easy manufacturing



Standard

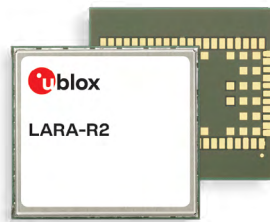


Professional



Automotive

24.0 × 26.0 × 2.6 mm



Product description

LARA-R2 series modules support multi-band LTE-FDD with six 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-R220	LARA-R280
Grade						
Automotive						
Professional	•	•	•	•	•	•
Standard						
Regions						
	North America	North America	North America	Europe	Japan	APAC
Access Technology						
GSM/GPRS bands	D1					
UMTS/HSPA [MHz]	850, 1900					2100
LTE bands	2, 4, 5, 12	2, 4, 12	4, 13	3, 7, 20	1, 19	3, 8, 28
Data rate	Cat 1	Cat 1	Cat 1	Cat 1	Cat 1	Cat 1
Positioning						
GNSS via modem §	•	•	□	•	•	•
AssistNow Software	•	•	□	•	•	•
CellLocate®	•	•	□	•	•	•
Interfaces						
UART	1	1	1	1	1	1
USB	1	1	1	1	1	1
HSIC	H	H	H	H	H	H
DDC (I²C)	1	1	1	1	1	1
SDIO (Master)	H	H	H	H	H	H
GPIO	9	9	9	9	9	9
Audio						
Digital audio	1	1		1		1
Features						
VoLTE	•	•		•		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)

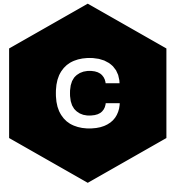
§ = external GNSS can be controlled via the modem

D1 = Dual-band 900/1800 MHz

□ = Available in future FW

H = Hardware-ready

c = CSFB only



Features

LTE	Cat 1 (10 Mbit/s DL, 5 Mbit/s UL) 3GPP Release 9 FDD bands: – LARA-R202: 2, 4, 5, 12 (N. America) – LARA-R203: 2, 4, 12 (N. America) – LARA-R204: 4, 13 (N. America) – LARA-R211: 3, 7, 20 (Europe) – 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: 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 1 USB 2.0 (high-speed, 480 Mbps) 1 HSIC ¹ 1 SDIO ¹ 1 DDC (I ² C)
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)
--------------	---

Band and frequency reference

Frequency in MHz	2100	1900	1800	1700	850	2600	900	700	750	850	800	700
GSM Band		PCS	DCS		GSM		E-GSM					
LTE/UMTS Band	1	2	3	4	5	7	8	12	13	19	20	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.

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	PTCRB, FCC, ISED, AT&T, T-Mobile ²
LARA-R203	PTCRB, FCC, ISED, AT&T, Rogers, T-Mobile ²
LARA-R204	GCF, FCC, ISED, Verizon
LARA-R211	GCF, RED, Vodafone
LARA-R220	Giteki, NTT docomo
LARA-R280	NCC, RCM

² = Voice service shall be disabled

Support products

EVK-R2	Evaluation kits for LARA-R2 series
RIL software	Available for Android 6.0
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 Europe. LTE bands 3, 7, 20
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

Legal Notice:

u-blox reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of u-blox is strictly prohibited.

The information contained herein is provided "as is". No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by u-blox at any time. For most recent documents, please visit www.u-blox.com.
Copyright © 2019, u-blox AG