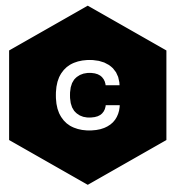
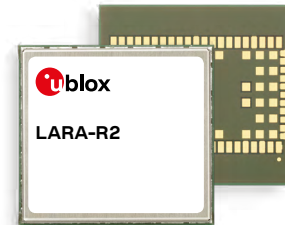


LARA-R2 series



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



24.0 × 26.0 × 2.6 mm

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

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.

Product selector

Model	Region	Technology	Positioning	Interfaces	Audio	Features	Grade
		LTE bands UMTS/HSPA bands GPRS/EDGE bands	GNSS via modem AssistNow Software CellLocate®	UART USB 2.0 HSIC * SDIO * (Master/Slave) DDC (I ² C) GPIO	Digital audio	VoLTE / Voice Antenna supervisor Jamming detection Embed. TCP/UDP stack Embed. HTTP(S), FTP(S) FW update via serial FOTA client Rx Diversity Dual stack IPv4 / IPv6	Standard Professional Automotive
LARA-R202	N. America: AT&T, T-Mobile	2,4,5,12 2,5	• • •	1 1 1 1 1 9	1	• • □ • • • • • • •	•
LARA-R203	N. America: AT&T, T-Mobile	2,4,12	• • •	1 1 1 1 1 9	1	• • □ • • • • • • •	•
LARA-R204	N. America: VZW	4,13	□ □ □	1 1 1 1 1 9	1	□ • □ • • • • • • •	•
LARA-R211	Europe	3,7,20 D	• • •	1 1 1 1 1 9	1	• • □ • • • • • • •	•
LARA-R220	Japan: NTT docomo	1,19	• • •	1 1 1 1 1 9	1	• □ • • • • • • • •	•
LARA-R280	APAC	3,8,28 1	• • •	1 1 1 1 1 9	1	C • □ • • • • • • •	•

□ = Available in future FW version * = Hardware ready C = CSFB only D = Dual-band 900/1800 MHz

LARA-R2 series



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: – LARA-R202: 2, 5 – LARA-R280: 1
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 client (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

GSM Band	PCS	DCS		GSM		E-GSM						
LTE/UMTS Band	1	2	3	4	5	7	8	12	13	19	20	28
MHz	2100	1900	1800	1700	850	2600	900	700	750	850	800	700

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

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 © 2018, u-blox AG