LTE-M / NB-IoT modules

	LTE-M / NB-IoT - global and regional coverage						
	SARA-R510S-61B	**SARA-R510M8S-61B**	**SARA-R510M8S-71B**	**SARA-R422**	**SARA-R422S**	**SARA-R422M10S**	**LEXI-R422**
Grade							
Automotive							
Professional	•	•	•	•	•	•	•
Standard							
Physical							
Image	u-blox SARA-R5			u-blox SARA-R4			u-blox LEXI-R422
Size [mm]	16.0 x 26.0 x 2.2			16.0 x 26.0 x 2.2			16 x 16 x 2
Package and pins	96-pin LGA			96-pin LGA			133-pin LGA
Regions	Japan	Japan	Korea	Global			Global
Access technology							
LTE-M / NB-IoT bands	1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 71, 85			1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 85			
Main technology, data rate	M1/NB2			M1/NB2	M1/NB2	M1/NB2	M1/NB2
GSM/GPRS bands				Q	Q	Q	Q
Positioning							
Integrated u-blox GNSS receiver		■	■			■	
External GNSS control via modem	•				•		•
GNSS stand-alone operation							
Compatible u-blox services							
MQTT Anywhere™, MQTT Flex™	•	•	•		•	•	•
AssistNow™ and CellLocate®	•	•	•		•	•	•
CloudLocate™		•	•			•	
Interfaces							
UART	2	2	2	2	2	2	2
USB (for diagnostics)	1	1	1	1	1	1	1
I2C	1	1	1	1	1	1	1
USIM	1	1	1	1	1	1	1
GPIO	6	6	6	6	6	6	6
ADC	1	1	1				
Features							
CellTime ™	•	•	•				
Secure boot and updates	•	•	•	•	•	•	•
Jamming detection	•	•	•	•	•	•	•
Last gasp	•	•	•		•	•	•
LwM2M	•	•	•	•	•	•	•
FW update via serial interface	•	•	•	•	•	•	•
FOTA	•	•	•	•	•	•	•
eDRX	•	•	•	•	•	•	•
PSM	•	•	•	•	•	•	•
Ultra-low / deep sleep mode	•			•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•	•	•	•
MQTT, MQTT-SN	•	•	•		•	•	•
TCP/UDP stack	•	•	•	•	•	•	•
HTTPS, FTPS	•	•	•		•	•	•
TLS, DTLS	•	•	•		•	•	•
CoAP	•	•	•		•	•	•

M1 = LTE Cat M1, Rel 13 (300 kb/s DL, 375 kb/s UL)
      LTE Cat M1, Rel 14 (300 kb/s DL, 1200 kb/s UL)
NB2 = Cat NB2 (125 kb/s DL, 140 kb/s UL)

Q = quad-band

■ = and dedicated GNSS antenna interface

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LTE-M / NB-IoT / SAT IoT modules

	LTE-M / SAT	LTE-M / NB-IoT		
	SARA-S520BM10	LEXI-R520	SARA-R520	SARA-R520M10
Grade				
Automotive				
Professional	•	•	•	•
Standard				
Physical				
Image	SARA-S520BM10	LEXI-R520	SARA-R5	
Size [mm]	16.0 x 26.0 x 2.2	16 x 16 x 2	16.0 x 26.0 x 2.2	
Package and pins	96-pin LGA	133-pin LGA	96-pin LGA	
Regions	Global	Global	Global	
Access technology				
LTE-M / NB-IoT bands	1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28, 66, 71, 85			
Main technology, data rate	M1	M1/NB2	M1/NB2	
Satellite protocol / bands	IDP / L-band			
GSM/GPRS bands				
Positioning				
Integrated u-blox GNSS receiver	•			■
External GNSS control via modem		•	•	
GNSS stand-alone operation				
SpotNow		■	■	
Compatible u-blox services				
MQTT Anywhere™ , MQTT Flex™	•	•	•	•
AssistNow™ and CellLocate®	•	•	•	•
CloudLocate™	•			•
Interfaces				
UART	2	2	2	2
USB (for diagnostics)	1	1	1	1
I2C	1	1	1	1
USIM	1	1	1	1
GPIO	•	•	•	•
ADC	1	1	1	1
Features				
Smart Connection Manager		•	•	•
Secure boot and updates	•	•	•	•
Jamming detection	•	•	•	•
Last gasp	•	•	•	•
LwM2M	•	•	•	•
FW update via serial interface	•	•	•	•
FOTA	•	•	•	•
eDRX	•	•	•	•
PSM	•	•	•	•
Ultra-low / deep sleep mode	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•
MQTT, MQTT-SN	•	•	•	•
TCP/UDP stack	•	•	•	•
HTTPS, FTPS	•	•	•	•
TLS, DTLS	•	•	•	•
CoAP	•	•	•	•
Antenna dynamic tuning	•	•	•	•
CellTime ™	•	•	•	•

M1 = LTE Cat M1, Rel 13 (300 kb/s DL, 375 kb/s UL)
LTE Cat M1, Rel 14 (300 kb/s DL, 1200 kb/s UL)
NB2 = Cat NB2 (125 kb/s DL, 140 kb/s UL)

■ = and dedicated GNSS antenna interface

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LTE Cat 1bis modules

	LTE Cat 1bis				
	LEXI-R10011D*	LEXI-R10401D*	LEXI-R10801D*	LENA-R8001	LENA-R8001M10
Grade					
Automotive					
Professional	•	•	•		
Standard				•	•
Physical					
Image	LEXI-R10			LENA-R8	
Size [mm]	16 x 16 x 2.0			27 x 30 x 2.7	
Package and pins	133-pin LGA			100-pin LGA	
Regions	Global	Americas	EMEA, APAC	Global	Global
Access technology					
LTE FDD bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 20, 25, 28, 66	2, 4, 5, 12, 13, 14, 66, 71	1, 3, 5, 7, 8, 20, 28	1, 2, 3, 4, 5, 7, 8, 12, 20, 28, 66	
LTE TDD bands	34, 38, 39, 40, 41			38, 40, 41	
GSM/GPRS bands				Q	
Main technology, data rate	Cat 1bis	Cat 1bis	Cat 1bis	Cat 1bis	
Positioning					
External GNSS control via modem				•	
Integrated u-blox GNSS receiver					■
GNSS standalone operation					•
Compatible u-blox Services					
MQTT Anywhere™, MQTT Flex™				•	•
AssistNow™				•	•
CellLocate®	•	•	•	•	•
Interfaces					
UART	2	2	2	2	3
USB	1	1	1	1	1
I2C	1	1	1	1	1
GPIO	10	10	10	6	6
I2S				1	1
USIM	1	1	1	1	1
Features					
Secure boot and updates	•	•	•	•	•
Jamming detection				•	•
SNTP	•	•	•		
Wi-Fi scan	•	•	•		
Backup/restore	•	•	•		
FW update via serial interface	•	•	•	•	•
FOTA	•	•	•	•	•
eDRX	•	•	•	•	•
PSM	•	•	•	•	•
Deep sleep mode	•	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•	•
MQTT, MQTT-SN	MQTT only			•	•
TCP/UDP stack	•	•	•	•	•
HTTPS, FTPS	•	•	•	•	•
TLS, DTLS	•	•	•	•	•
VoLTE, CSFB				•	•

Cat 1bis = LTE Cat 1 (10 Mb/s DL, 5 Mb/s UL)   * = Data-only variant   o = Optional   ■ = and dedicated GNSS antenna interface
Q = quad-band

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LTE Cat 1 and LTE Cat 4 modules

	LTE Cat 1			LTE Cat 4		
	LARA-R6001 / LARA-R6001D*	LARA-R6401 / LARA-R6401D*	LARA-R6801 / LARA-R6801D*	LARA-L6004 / LARA-L6004D*	LARA-L6804D*	LARA-L6404 / LARA-L6404D*
Grade						
Automotive						
Professional	•	•	•	•	•	•
Standard						
Physical						
Image	LARA-R6			LARA-L6		
Size [mm]	24 x 26 x 2.6			24 x 26 x 2.6		
Package and pins	100-pin LGA			100-pin LGA		
Regions	Global	North America	Multi-region	Global	Multi-region	North America
Access technology						
LTE FDD bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28	2, 4, 5, 12, 13, 14, 66, 71	1, 2, 3, 4, 5, 7, 8, 18, 19, 20, 26, 28	1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28	1, 2, 3, 4, 5, 7, 8, 18, 19, 20, 26, 28	2, 4, 5, 12, 13, 14, 66, 71
LTE TDD bands	38, 39, 40, 41			38, 39, 40, 41		
UMTS/HSPA [MHz]	850, 900, 1900, 2100		850, 900, 1900, 2100	850, 900, 1900, 2100		
GSM/GPRS bands	Q		Q	Q	Q	
Main technology, data rate	Cat 1	Cat 1	Cat 1	Cat 4	Cat 4	Cat 4
Positioning						
External GNSS control via modem	•	•	•	•	•	•
Integrated u-blox GNSS receiver						
GNSS standalone operation						
Compatible u-blox Services						
MQTT Anywhere™, MQTT Flex™	•	•	•	•	•	•
AssistNow™	•	•	•	•	•	•
CellLocate®	•	•	•	•	•	•
Interfaces						
UART	2	2	2	2	2	2
USB	1	1	1	1	1	1
I2C	1	1	1	1	1	1
I2S	1	1	1	1		1
GPIO	9	9	9	9	9	9
USIM	1	1	1	1	1	1
Features						
Secure boot and updates	•	•	•	•	•	•
Jamming detection	•	•	•	•	•	•
Last gasp	•	•	•	•	•	•
LwM2M	•	•	•	•	•	•
FW update via serial interface	•	•	•	•	•	•
FOTA	•	•	•	•	•	•
eDRX	•	•	•	•	•	•
PSM	•	•	•	•	•	•
Rx Diversity	•	•	•	•	•	•
Dual stack IPv4/IPv6	•	•	•	•	•	•
MQTT, MQTT-SN	•	•	•	•	•	•
TCP/UDP stack	•	•	•	•	•	•
HTTPS, FTPS	•	•	•	•	•	•

Cat 4 = LTE Cat 4 (150 Mb/s download, 50 Mb/s upload)   Q = quad-band   * = Data-only variant
Cat 1 = LTE Cat 1 (10 Mb/s DL, 5 Mb/s UL)