

Stand-alone short range radio modules



Grade:	Automotive Professional Standard	Multiradio				Wi-Fi		Bluetooth								
		ODIN-W260	ODIN-W262	NINA-W101	NINA-W102	NINA-W131	NINA-W132	ANNA-B112	NINA-B301	NINA-B302	NINA-B311	NINA-B312	NINA-B221	NINA-B222	NINA-B111	NINA-B112
Physical		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



Size [mm]	14.8 x 22.3		10.0 x 10.6 / 14.0				6.5 x 6.5		10.0 x 11.6 / 15.0				10.0 x 10.6 / 14.0							
Height [mm]	3.2 / 4.7		2.2 / 3.8				1.2		2.2 / 3.8				2.2 / 3.8							
Pins	52		36				52		55				36		30					
Radio																				
Bluetooth qualification	v4.0		v4.2				v5.0		v5.0				v4.2		v5.0					
Bluetooth profiles	S,D,P,G		S,D,P,G				G		G				S,G		G					
Bluetooth BR/EDR	•		•				•		•				•		•					
Bluetooth low energy	•		•				•		•				•		•					
Wi-Fi IEEE 802.11 standards	a/b/g/n		b/g/n				b/g/n													
Wi-Fi 2.4 / 5 [GHz]	2.4 and 5		2.4				2.4													
NFC for "Touch to Pair"							•		•						•					
Bluetooth output power EIRP [dBm]	14	11	8				4	11	10	11	10	8		7	6					
Wi-Fi output power EIRP [dBm]	18	15	19				19													
Max range [meters]	300	250	400	300	400	300	160	1400				TBD		350	300					
Antenna type	c	i	p	i	p	i	i	p	i	p	i	p	i	p	i					
Application software																				
u-blox connectivity software	•	•					•	•	•	•				•	•	•	•			
Open CPU for embedded customer applications	•	•	•	•					•	•					•	•	•			
Interfaces																				
UART	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
SPI	•	•	•	•					•	•	•					•	•			
I ² C	•	•	•	•	•	•	•	•	•	•					•	•				
I ² S			•				•		•						•					
USB									•											
RMII	•	•	•	•					•											
GPIO pins	23	29	23	29	20	20	13	13	11	25	38	38	28	28	13	13	7	19	7	19
AD converters (ADC)	3		3		4		4		8		8		8				8		8	
Features																				
AT command interface	•	•					•		•				•		•					
Point-to-Point Protocol	•	•					•													
Extended Data Mode	•	•					•		•				•		•					
Low Energy Serial Port Service	•	•					•		•				•		•					
Throughput [Mbit/s]	20		100				20		0.8	1.4	1.4		0.8		1.0	1.0	0.8	1.4	0.8	1.4
Maximum connections	7		8				7		8	20	20		8		8	8	8	20	8	20
Micro Access Point [max stations]	10		4				4													
Wi-Fi enterprise security	•		•				•													
Secure boot			•				•		•				•							
Mesh networking									•						•		•			
FOTA			•						•		•						•	•		
ATEX / IECEx certified	•																			

S = SPP D = DUN p = Antenna pin i = Internal antenna □ = Available in future firmware
 P = PAN G = GATT c = U.FL connector(s) for external antenna



Host-based short range radio modules and chips



	Multiradio (Wi-Fi and Bluetooth)										Wi-Fi		V2X					
	JODY-W163	JODY-W164	JODY-W167	EMMY-W161	EMMY-W163	EMMY-W165	ELLA-W131	ELLA-W133	ELLA-W161	ELLA-W163	LILY-W131	LILY-W132	VERA-P173	VERA-P174	UBX-P3			
Grade:	Automotive Professional Standard																	
Physical																		
Image																		
Size [mm]	13.8 x 19.8			13.8 x 19.8			14.8 x 14.8				10.0 x 14.0		24.8 x 29.6		9 x 11			
Height [mm]	2.5			2.5			2.5				2.2 / 3.8		3.5		1.04			
Pins	60			46			30				25		160		357			
Radio																		
Bluetooth qualification	v4.2			v4.2			v3.0+HS											
Bluetooth profiles	HCI			HCI			HCI											
Bluetooth BR/EDR	•	•	•	•	•	•	•	•	•	•								
Bluetooth low energy	•	•	•	•	•	•												
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac			a/b/g/n/ac			b/g/n	a/b/g/n		b/g/n		p		p/a				
Wi-Fi 2.4 / 5 [GHz]	2.4 and 5			2.4 and 5			2.4	2.4 and 5		2.4								
LTE filter	o	o	o	•	•	•					•							
Bluetooth output power or EIRP [dBm]	10	10	10															
Wi-Fi output power or EIRP [dBm]	18	18	18															
Channel width [MHz]														10/20				
Rx/Tx diversity														•				
Antenna type	2p	2p	3p	1p	2p	1p	1p	2p	1p	2p	1a	i	2a	2a				
OS support																		
Android / Linux (from u-blox)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Linux			
QNX (via third party)	•	•	•	•	•	•	•	•	•	•								
Interfaces																		
High-speed UART[®]	•	•	•	•	•	•									4			
PCIe^W	•																	
SDIO [version]	v3 ^W			v3	v3	v3	v2	v2	v2	v2	v2	v2			v3			
USB 2.0														•	•	•	•	
GPIO																•	•	20
PPS and SPI																•	•	•
PCM (Bluetooth audio)	•	•	•	•	•	•	•	•	•	•								
Features																		
Micro Access Point [max connects]	10	10	10	10	10	10	10	10	10	10	8	8						
AES hardware support	•	•	•	•	•	•	•	•	•	•	•	•						
Wi-Fi direct	•	•	•	•	•	•	•	•	•	•	•	•						
Simultaneous STA/AP on different channels	•	•	•	•	•	•												
Factory calibrated RF	•	•	•	•	•	•	•	•	•	•	•	•						
Factory-assigned MAC address	•	•	•	•	•	•	•	•	•	•	•	•						
Router function with TOBY-L2														•				
Antenna diversity														•	◆	•		
Single channel operation														•	•	•		
Concurrent dual-channel operation															◆	•		
Security Acceleration Engine																•		

* = Without RF shield
 B = For Bluetooth only
 W = For Wi-Fi only
 o = On request

1p = 1 antenna pin for combined Bluetooth and Wi-Fi
 2p = 2 antenna pins, one each for Bluetooth and Wi-Fi
 3p = 3 pins, 2 for Wi-Fi and 1 for Bluetooth antenna
 ◆ = User can configure as dual-channel or diversity

1a = 1 pin for external antenna
 2a = 2 pins for 2 external antennas
 i = Internal antenna

