

Stand-alone Bluetooth modules

S

Grade

Automotive
Professional
Standard

Physical

Image



Size [mm]	10.4 × 11.2 × 1.9 / 10.4 × 14.3 × 1.9		10.4 × 11.2 × 1.9 / 10.4 × 14.3 × 1.9								10.4 × 14.3 × 1.7										
Operating temperature [°C]	-40 to +105		-40 to +85								-40 to +105										
Radio																					
Chip inside	nRF54H20		nRF54L15	nRF54L10	nRF54L05	nRF54L10					nRF5340										
Bluetooth Core qualified	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.2	5.2	5.2	5.2	5.2	5.2					
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
Thread / Zigbee	•/-	•/-	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
NFC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
Max range [meters]	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	700	700	400	1700	1700	1500					
Bluetooth output power [dBm]	13	13	10	10	10	10	10	10	10	10	8	8	5	18	18	15					
Antenna type (see footnotes)	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pin	pcb	U.FL	pin	pcb	U.FL	pin	pcb					
Application software																					
u-connectXpress											•	•									
Open CPU for embedded SW	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
Interfaces																					
CAN FD	♦	♦																			
UART	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
SPI	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
I2C	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
I2S	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
USB	♦	♦									♦	♦	♦	♦	♦	♦					
PDM and/or PWM	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
GPIO pins	64	64	31	31	31	31	31	31				48	48	48	46	46	46				
AD converters [number of bits]	14	14	14	14	14	14	14	14				12	12	12	12	12	12				
Features																					
MCU (see footnotes)	2 x M33/RISC-V*		Arm® Cortex-M33 + RISC-V								Dual-core Arm® Cortex-M33										
RAM [kB] (including all cores)	1 MB		256	256	192	192	96	96					512 + 64								
NVM [kB] (including all cores)	2 MB		1500	1500	1000	1000	500	500					1024 + 256								
Matter	♦	♦	♦	♦	♦	♦										♦	♦	♦	♦	♦	♦
Bluetooth mesh	♦	♦	♦	♦	♦	♦	♦	♦					♦	♦	♦	♦	♦	♦			
Direction finding (AoA/AoD)																					
Bluetooth long range	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Bluetooth Channel Sounding	♦	♦	♦	♦	♦	♦	♦	♦													
Bluetooth LE audio	♦	♦																			
Low Energy Serial Port Service											♦	♦									
Arm TrustZone®	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Security Root of Trust	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Secure boot	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Secure storage	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Throughput [Mbit/s]	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0.8	0.8	1.4	1.4	1.4	1.4	1.4	1.4					
FOTA	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦					
Simultaneous GATT server / client	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦											

pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

*2 x M33/RISC-V = Dual Arm® Cortex®-M33,
Dual RISC-V

♦ = Feature enabled by hardware. The actual support
depends on the open CPU application software.

Stand-alone Bluetooth modules



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Image



	NINA-B501	NINA-B506	NINA-B400	NINA-B401	NINA-B406	NINA-B410	NINA-B411	NINA-B416	NINA-B301	NINA-B306
Size [mm]	10.0 x 11.6 x 2.4 / 10.0 x 15.0 x 2.4		10.0 x 15.0 x 2.2 / 10.0 x 11.6 x 2.2						10.0 x 11.6 x 2.2 / 10.0 x 15.0 x 2.2	
Operating temperature [°C]	-40 to +85		-40 to +105						-40 to +85	
Radio	MCX W71		nRF52833						nRF52840	
Chip inside	MCX W71		nRF52833						nRF52840	
Bluetooth qualification version	5.3	5.3	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.0
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•
Thread / Zigbee	•	•	•	•	•				•	•
NFC			•	•	•	•	•	•	•	•
Max range [meters]	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
Bluetooth output power [dBm]	13	13	11	11	11	11	11	11	10	10
Antenna type (see footnotes)	pin	pcb	U.FL	pin	pcb	U.FL	pin	pcb	pin	pcb
Application software										
u-connectXpress						•	•	•		
Open CPU for embedded SW	•	•	•	•	•				•	•
Interfaces										
FlexCAN / CAN FD	♦	♦								
UART	♦	♦	♦	♦	♦	2	2	2	♦	♦
SPI	♦	♦	♦	♦	♦				♦	♦
I2C	♦	♦	♦	♦	♦				♦	♦
I2S	♦	♦	♦	♦	♦				♦	♦
USB			♦	♦	♦				♦	♦
PDM and PWM	♦	♦	♦	♦	♦				♦	♦
GPIO pins	29	29	40	40	40	26	26	26	38	38
AD converters [number of bits]	16	16	12	12	12				12	12
Features										
AT command interface						•	•	•		
Direction finding (AoA/AoD)			♦	♦	♦					
MCU (see footnotes)	Arm® Cortex-M33, -M3 and -M0+		M4F	M4F	M4F				M4F	M4F
RAM [kB]	128 + 88		128	128	128				256	256
NVM [kB]	1024 + 256		512	512	512				1024	1024
Matter	♦	♦							♦	♦
Max Bluetooth connections	24	24	20	20	20	8	8	8	20	20
Bluetooth long range	♦	♦	♦	♦	♦	•	•	•	♦	♦
Bluetooth mesh			♦	♦	♦				♦	♦
Low Energy Serial Port Service						•	•	•		
Channel Sounding										
Arm TrustZone®	♦	♦								
Security Root of Trust	♦	♦								
On-the-fly flash encryption	♦	♦								
Throughput [Mbit/s]	1.4	1.4	1.4	1.4	1.4	0.8	0.8	0.8	1.4	1.4
Secure boot	♦	♦	♦	♦	♦	•	•	•	♦	♦
FOTA	♦	♦	♦	♦	♦				♦	♦
Dual-PAN HW support	♦	♦								

pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

M33 = 260 MHz Arm® Cortex-M33
M4F = 64 MHz Arm® Cortex-M4 with FPU

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.

UBX-14003456 - R33 - August, 2025



Stand-alone Bluetooth modules

S

Grade

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Professional
Standard

Physical

Image

NINA-B221		NINA-B222		NINA-B111		NINA-B112		ANNA-B501		ANNA-B505		ANNA-B561		ANNA-B565		ANNA-B402		ANNA-B412		ANNA-B112	
•		•		•		•		•		•		•		•		•		•		•	
																					
10 x 10.6 x 2.2 / 10 x 14.0 x 3.8						6.5 x 6.5 x 1.2															
-40 to +85						-40 to +85						-40 to +105				-40 to +85					
ESP32		nRF52832				nRF54L15				nRF52833				nRF52832							
4.2	4.2	5.0	5.0		6.0	6.0	6.0	6.0	5.1	5.1	5.0										
•	•	•	•		•	•	•	•	•	•	•										
•	•				•	•			•												
		•	•		•	•	•	•	•	•	•										
200	200	350	350		TBD	TBD	TBD	TBD	800 / 1400 *	160 / 190 *											
8	8	7	6		8	8	8	8	9 / 13 *	5 / 8 *											
pin	metal	pin	metal		pin	chip	pin	chip	chip or pin	chip or pin											
•	•		•		•	•				•					•						
		•		•		•	•		•		•				•						
1	1	◆	1	◆	1	◆	◆	•	•	◆	2		◆	◆	1						
1	1	◆		◆		◆	◆			◆			◆	◆							
		◆		◆		◆	◆			◆			◆	◆							
		◆		◆		◆	◆			◆			◆	◆							
		◆		◆		◆	◆			◆			◆	◆							
16	16	19	7	19	7	32	32			33	19	25	11								
		12		12		14	14			12		12									
•	•		•		•	•				•					•						
						Arm® Cortex-M33 + RISC-V				◆											
		M4F		M4F						M4F	M4F										
		64		64		256	256			128	64										
•	•	512	•	512	•	1500	1500			512	•	512	•								
						◆	◆														
8	8	20	7	20	7					20	7	20	7								
						◆	◆	•	•												
						◆	◆	•	•												
•	•	◆		◆		◆	◆	•	•	◆	◆										
1.0	1.0	1.4	0.8	1.4	0.8	1.4	1.4	0.8	0.8	1.4	0.8	1.4	0.8								
•	•					◆	◆	•	•	◆	•										

chip = Internal chip antenna
pin = Antenna pin
pcb = Internal PCB antenna
metal = Internal metal PIFA antenna

M4F = 64 MHz Arm® Cortex-M4 with FPU
* = Different values for use with internal or external antenna

◆ = Feature enabled by hardware. The actual support depends on the open CPU application software.

UBX-14003456 - R33 - August, 2025

Stand-alone Bluetooth modules

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	Bluetooth modules									Antenna boards	
	BMD-360	BMD-380	BMD-340	BMD-341	BMD-345	BMD-350	BMD-301	BMD-300	BMD-330	ANT-B10	ANT-B11
Grade											
Automotive											
Professional											
Standard	•	•	•	•	•	•	•	•	•	•	•
Physical											
Image											
Size [mm]	9.8 x 14.0 x 1.9	7.5 x 9.5 x 1.5	10.2 x 15.0 x 1.9			6.4 x 8.6 x 1.5	9.8 x 14.0 x 1.9			126 x 126	29.5 x 93.5
Operating temperature [°C]	-40 to +85									-40 to +85	-40 to +85
Radio											
Chip inside	nRF52811	nRF52840				nRF52832			nRF52810	nRF52833	nRF52833
Bluetooth qualification version	5.1	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.1
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•
Thread	•	•	•	•	•						
Zigbee		•	•	•	•						
NFC		•	•	•	•	•	•	•			
Max range [meters]	200	500	500	750	1700	190	400	200	200	70	70
Bluetooth output power [dBm]	3	7	7	11	18	5	9	3	3	N.A.	N.A.
Antenna type (see footnotes)	pcb	chip	pcb	U.FL	U.FL	chip	U.FL	pcb	pcb	8 patch elements	3 patch elements
Application software											
u-locateEmbed										•	•
Open CPU for embedded SW	•	•	•	•	•	•	•	•	•		
Interfaces											
UART	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	1
SPI	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	
I2C	♦	♦	♦	♦	♦	♦	♦	♦	♦		
I2S		♦	♦	♦	♦	♦	♦	♦			
USB		♦	♦	♦	♦					1	
PDM and PWM	♦	♦	♦	♦	♦	♦	♦	♦	♦		
GPIO pins	32	44	48	48	44	32	32	32	32	3	
AD converters [number of bits]	12	12	12	12	12	12	12	12	12		
Features											
AT command interface										•	•
Direction finding (AoA/AoD)	♦									•	•
MCU (see footnotes)	M4	M4F	M4F	M4F	M4F	M4F	M4F	M4F	M4		
RAM [kB]	24	256	256	256	256	64	64	64	24		
NVM [kB]	192	1024	1024	1024	1024	512	512	512	192		
Matter		♦	♦	♦	♦						
Max Bluetooth connections	4	20	20	20	20	20	20	20	4		
Bluetooth mesh		♦	♦	♦	♦	♦	♦	♦			
Bluetooth long range	♦	♦	♦	♦	♦						
Throughput [Mbit/s]	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4		
Secure boot		♦	♦	♦	♦					•	•
FOTA	♦	♦	♦	♦	♦	♦	♦	♦	♦		

chip = Internal chip antenna
pin = Antenna pin
pcb = Internal PCB antenna
U.FL = U.FL antenna connector

M4 = 64 MHz Arm® Cortex-M4
M4F = 64 MHz Arm® Cortex-M4 with FPU

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.

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Stand-alone short range radio modules



	Multiradio (Wi-Fi and Bluetooth)											
	NORA-W401	NORA-W406	NORA-W301	NORA-W306	NORA-W361	NORA-W366	NORA-W251 AWS	NORA-W256 AWS	NORA-W101 -00B	NORA-W106 -00B	NORA-W106 -10B	
Grade												
Automotive												
Professional	•	•	•	•	•	•	•	•	•	•	•	
Standard												
Physical												
Image												
Size [mm]	10.4 × 14.3 × 1.9		10.4 × 14.3 × 1.9				10.4 × 14.3 × 1.9		10.4 × 14.3 × 1.9			
Operating temperature [°C]	-40 to +85											
Radio												
Chip inside	ESP32-C6		RTL8720DF				ESP32-S3		ESP32-S3			
Bluetooth qualification version	5.3		5.3		5.3		5.0		5.0			
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	•	
Thread	•	•										
Bluetooth output power [dBm]	10	10	6.5	8	6.5	8	8	8	10	10	10	
Wi-Fi band [GHz]	2.4		2.4 and 5		2.4 and 5		2.4	2.4	2.4	2.4	2.4	
Wi-Fi IEEE 802.11 standards	b/g/n/ax		a/b/g/n		a/b/g/n		b/g/n	b/g/n	b/g/n	b/g/n	b/g/n	
Wi-Fi output power [dBm]	20	20	20	20	20	20	20	20	20	20	20	
Max Wi-Fi range [meters]	500	500	500	500	500	500	500	500	500	500	500	
Antenna type (see footnotes)	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pin	pcb	pcb	
Application software												
AWS IoT ExpressLink							•	•				
u-connectXpress					•	•						
Open CPU for embedded apps	•	•	•	•					•	•	•	
Interfaces												
UART	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
USB	♦	♦	♦	♦					♦	♦	♦	
SDIO	♦	♦	♦	♦					♦	♦	♦	
SPI	♦	♦	♦	♦					♦	♦	♦	
I2C	♦	♦	♦	♦					♦	♦	♦	
I2S	♦	♦	♦	♦					♦	♦	♦	
RMII												
GPIO pins	22	22	21	21					38	38	33	
AD converters [number of bits]	12	12	12	12					12	12	12	
Features												
AT command interface					•	•	•	•				
MCU (see footnotes)	RISC-V, 160 MHz		M33 + M23	M33 + M23			LX7	LX7	LX7	LX7	LX7	
RAM [kB]	512	512	512	512			512	512	512	512	8192	
NVM [MB]	4/8	4/8	4	4			8	8	8	8	ext	
Matter	♦	♦	♦	♦					♦	♦	♦	
Bluetooth LE audio												
Max Bluetooth connections	TBD	TBD	3	3	3	3	1	1	7	7	7	
Micro Access Point [stations]	TBD	TBD	5	5	5	5			10	10	10	
Wi-Fi throughput [Mbit/s]	TBD	TBD	72	72	2.5	2.5	20	20	150	150	150	
Wi-Fi enterprise security	♦	♦	♦	♦	•	•			♦	♦	♦	
End-to-end security (TLS)	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
Secure boot	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	
WPA3	♦	♦	♦	♦	•	•	•	•	♦	♦	♦	

pin = Antenna pin
pcb = Internal PCB antenna
ext = External flash required

LX7 = 240 MHz dual-core Xtensa LX7
M33 = 260 MHz Arm® Cortex-M33
M23 = 20 MHz Arm® Cortex-M23

♦ = Feature enabled by hardware. The actual support depends on the open CPU application software.



Stand-alone short range radio modules

S

Grade

Automotive
Professional
Standard

Physical

Image

Size [mm]

Operating temperature [°C]

Radio

Chip inside

Bluetooth qualification version

Bluetooth Low Energy

Thread

Bluetooth output power [dBm]

Wi-Fi band [GHz]

Wi-Fi IEEE 802.11 standards

Wi-Fi output power [dBm]

Max Wi-Fi range [meters]

Antenna type (see footnotes)

Application software

u-connectXpress

Open CPU for embedded apps

Interfaces

UART

USB

SDIO

SPI

I2C

I2S

RMII

GPIO pins

AD converters [number of bits]

Features

AT command interface

MCU (see footnotes)

RAM [kB]

NVM [MB]

Matter

Bluetooth LE audio

Point-to-Point Protocol

Low Energy Serial Port Service

Max Bluetooth connections

Micro Access Point [stations]

Wi-Fi throughput [Mbit/s]

Wi-Fi enterprise security

End-to-end security (TLS)

Secure boot and WPA3

Multiradio (Wi-Fi and Bluetooth)

Wi-Fi

IRIS-W101

IRIS-W106

NINA-W151

NINA-W152

NINA-W156

NINA-W106

NINA-W131

NINA-W132



14.6 × 16.8 × 2.1 / 14.6 × 20.9 × 2.1

10.0 × 10.6 × 2.2 / 10.0 × 14.0 × 3.8 / 10.0 × 14.0 × 2.2

-40 to +85

RW610 / RW612

ESP32

ESP32

ESP32

5.4

4.2

4.2

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10

10

8

8

8

8

2.4 and 5

2.4

2.4

2.4

2.4

2.4

2.4

a/b/g/n/ax

b/g/n

b/g/n

b/g/n

b/g/n

b/g/n

b/g/n

20

20

18

18

18

18

18

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TBD

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pin = Antenna pin
pcb = Internal PCB antenna
metal = internal metal PIFA antenna

LX6 = 240 MHz dual-core Xtensa LX6
M33 = 260 MHz Arm® Cortex-M33

◆ = Feature enabled by hardware. The actual support depends on the open CPU application software.

UBX-14003456 - R33 - August, 2025

Host-based short range radio modules

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	Multiradio (Wi-Fi and Bluetooth)										
	MAYA-W160	MAYA-W161	MAYA-W166	M2-MAYA-W161	MAYA-W260	MAYA-W261	MAYA-W266	MAYA-W271	MAYA-W276	M2-MAYA-W271	
Grade											
Automotive	•	•	•		•	•	•	•	•		
Professional				•						•	
Standard											
Physical											
Image											
Size [mm]	10.4 x 14.3 × 1.9			22 x 30 x 2.8		10.4 x 14.3 × 1.9				22 x 30 x 2.8	
Operating temperature [°C]	-40 to +85			-40 to +85		-40 to +85				-40 to +85	
Radio											
Chip inside	NXP IW416			NXP IW416		NXP IW611		NXP IW612		NXP IW612	
Bluetooth qualification version	5.2			5.2		5.3				5.3	
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•	•	
Bluetooth BR/EDR	•	•	•	•	•	•	•	•	•	•	
Bluetooth output power [dBm] *	10	10	10	10	<20	<20	<20	<20	<20	<20	
Wi-Fi output power [dBm] *	18	18	18	18	18	18	18	18	18	18	
Wi-Fi IEEE 802.11 standards	a/b/g/n	a/b/g/n	a/b/g/n	a/b/g/n	a/b/g/n/ac/ax				a/b/g/n/ac/ax		
Wi-Fi band [GHz]	2.4 and 5	2.4 and 5	2.4 and 5	2.4 and 5	2.4 and 5				2.4 and 5		
Maximum Wi-Fi channel width [MHz]	40	40	40	40	80	80	80	80	80	80	
LTE filter	o	o	o	o	o	o	o	o	o	o	
Antenna type (see footnotes)	2 U.FL	2 pin	pcb (pin)	2 U.FL	2 U.FL	2 pin	pcb/pin	2 pin	pcb/pin	2 U.FL	
Thread						•				•	
OS support											
Android / Linux drivers	•	•	•	•	•	•	•	•	•	•	
RTOS (via NXP i.MX RT MCUs)	•	•	•	•	•	•	•	•	•	•	
Interfaces											
High-speed UART [®]	1	1	1	1	1	1	1	1	1	1	
SDIO [version] ^W	v3	v3	v3	v3	v3	v3	v3	v3	v3	v3	
PCM/I2S (Bluetooth audio)	1	1	1	1	1	1	1	1	1	1	
SPI host interface for Thread						1	1	1	1	1	
Features											
Bluetooth LE audio						•	•	•	•	•	
Bluetooth long range	•	•	•	•	•	•	•	•	•	•	
Micro Access Point [max connects]	8	8	8	8	16	16	16	16	16	16	
AES hardware support	•	•	•	•	•	•	•	•	•	•	
Wi-Fi direct	•	•	•	•	•	•	•	•	•	•	
Wi-Fi 802.11mc						•	•	•	•	•	
WPA3	•	•	•	•	•	•	•	•	•	•	
Factory-assigned MAC address in OTP	•	•	•	•	•	•	•	•	•	•	
Factory calibrated RF in OTP	•	•	•	•	•	•	•	•	•	•	
Simultaneous STA/AP roles	•	•	•	•							
Secure boot						•	•	•	•	•	

B = Bluetooth only
W = Wi-Fi only

pin = antenna pin

pcb = internal PCB antenna

U.FL = U.FL connector(s) for external antenna

o = On request

* = EIRP for embedded antennas; conducted for pins and connectors



	Multiradio (Wi-Fi and Bluetooth)								
	MAYA-W331	MAYA-W333	MAYA-W336	MAYA-W361	MAYA-W363	MAYA-W366	MAYA-W381	MAYA-W383	MAYA-W386
Grade									
Automotive									
Professional	•	•	•	•	•	•	•	•	•
Standard									
Physical									



Size [mm]	10.4 x 14.3 x 1.9								
Operating temperature [°C]	-40 to +85								
Radio									
Chip inside	IFX 55511			IFX 55512			IFX 55513		
Bluetooth qualification version	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Bluetooth Low Energy	•	•	•	•	•	•	•	•	•
Bluetooth BR/EDR	•	•	•	•	•	•	•	•	•
Bluetooth output power [dBm] *	<20	<20	<20	<20	<20	<20	<20	<20	<20
Wi-Fi output power [dBm] *	18	18	18	18	18	18	18	18	18
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac/ax			a/b/g/n/ac/ax			a/b/g/n/ac/ax		
Wi-Fi band [GHz]	2.4			2.4 and 5			2.4, 5, and 6		
Maximum Wi-Fi channel width [MHz]	20	20	20	20	20	20	20	20	20
LTE filter	o	o	o	o	o	o	o	o	o
Antenna type (see footnotes)	2 pin	1 pin	pcb	2 pin	1 pin	pcb	2 pin	1 pin	pcb
Thread									
OS support									
Android / Linux drivers	•	•	•	•	•	•	•	•	•
RTOS (via NXP i.MX RT MCUs)	•	•	•	•	•	•	•	•	•
Interfaces									
High-speed UART [®]	1	1	1	1	1	1	1	1	1
SDIO [version] ^w	v3	v3	v3	v3	v3	v3	v3	v3	v3
PCM/I2S (Bluetooth audio)	1	1	1	1	1	1	1	1	1
SPI host interface for Thread									
Features									
Bluetooth LE audio	•	•	•	•	•	•	•	•	•
Bluetooth long range	•	•	•	•	•	•	•	•	•
Micro Access Point [max connects]	16	16	16	16	16	16	16	16	16
AES hardware support	•	•	•	•	•	•	•	•	•
Wi-Fi direct	•	•	•	•	•	•	•	•	•
Wi-Fi 802.11mc							•	•	•
WPA3	•	•	•	•	•	•	•	•	•
Factory-assigned MAC address in OTP	•	•	•	•	•	•	•	•	•
Factory calibrated RF in OTP	•	•	•	•	•	•	•	•	•
Simultaneous STA/AP roles							•	•	•
Secure boot	•	•	•	•	•	•	•	•	•

B = Bluetooth only pin = antenna pin pcb = internal PCB antenna o = On request

W = Wi-Fi only

* = EIRP for embedded antennas; conducted for pins and connectors



Host-based short range radio modules

S

	Multiradio (Wi-Fi and Bluetooth)						
	JODY-W682	JODY-W683	JODY-W562	JODY-W354	JODY-W374	JODY-W377	M2-JODY-W377
Grade							
Automotive	•	•	•	•	•	•	
Professional				•	•	•	
Standard							•
Physical							
Image							
Size [mm]	13.8 x 19.8 x 2.5						22 x 30 x 4.2
Operating temperature [°C]	-40 to +105		-40 to +85/+105	-40 to +85			
Radio							
Chip inside	NXP AW693	NXP AW693	NXP AW611	NXP AW690	NXP 88Q9098/ NXP 88W9098		NXP 88Q9098
Bluetooth qualification version	5.3	5.3	5.4	5.3	5.3	5.3	5.3
Bluetooth Low Energy	•	•	•	•	•	•	•
Bluetooth BR/EDR	•	•	•	•	•	•	•
Bluetooth output power [dBm] *	10	10	12	10	10	10	10
Wi-Fi output power [dBm] *	19	19	18	19	19	19	19
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac/ax	a/b/g/n/ac/ax	a/b/g/n/ac/ax	a/b/g/n/ac/ax			a/b/g/n/ac/ax
Wi-Fi band [GHz]	2.4, 5, and 6	2.4, 5, and 6	2.4 and 5	2.4 and 5			2.4 and 5
Maximum Wi-Fi channel width [MHz]	80	80	80	80	80	80	80
LTE filter	o	o	o	o	o	o	
Antenna type (see footnotes)	2p	3p	2p	2p	2p	3p	3 U.FL
OS support							
Android / Linux drivers	•	•	•	•	•	•	•
QNX (via third party)	•	•	•	•	•	•	•
Interfaces							
High-speed UART ^B	1	1	1	1	1	1	1
PCIe ^W	1	1		1	1	1	1
SDIO [version] ^W			v3	v3	v3	v3	v3
PCM/I2S (Bluetooth audio)	1	1	1	1	1	1	1
Features							
Secure boot	•	•					
Bluetooth LE audio	•	•	•				
Bluetooth long range	•	•	•	•	•	•	•
Micro Access Point [max connects]	64	64	16	64	64	64	64
AES hardware support	•	•	•	•	•	•	•
Wi-Fi direct	•	•	•	•	•	•	•
Wi-Fi 802.11mc	•	•	•	•	•	•	•
WPA3	•	•	•	•	•	•	•
Factory-assigned MAC address in OTP	•	•	•	•	•	•	•
Factory calibrated RF in OTP	•	•		•	•	•	•
Simultaneous STA/AP roles	•	•	•	•	•	•	•
2x2 MIMO	•	•		•	•	•	•
Dual MAC	•	•		•	•	•	•

B = Bluetooth only 2p = 2 antenna pins, one each for Bluetooth and Wi-Fi
W = Wi-Fi only 3p = 3 pins, 2 for Wi-Fi and 1 for Bluetooth antenna

U.FL = U.FL connector(s) for external antenna

o = On request

* = EIRP for embedded antennas; conducted for pins and connectors

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Host-based short range radio modules

S

	Multiradio (Wi-Fi and Bluetooth)					Wi-Fi		
	JODY-W263	M2-JODY-W263	JODY-W163	JODY-W164	JODY-W167	LILY-W131	LILY-W132	LILY-W133
Grade								
Automotive	•		•	•	•	•	•	•
Professional	•							
Standard		•						
Physical								
Image								
Size [mm]	13.8 x 19.8 x 2.5	22 x 30 x 4.2	13.8 x 19.8 x 2.5			10.0 x 14.0 x 2.2 / 3.8		
Operating temperature [°C]	-40 to +85/+105		-40 to +85			-40 to +85		
Radio								
Chip inside	NXP 88W8987	NXP 88W8987	CYW 88359/CYW 89359			NXP 88W8801		
Bluetooth qualification version	5.2	5.2	5.0 ^{W/O}					
Bluetooth Low Energy	•	•	•	•	•			
Bluetooth BR/EDR	•	•	•	•	•			
Bluetooth output power [dBm] *	10	10	10	10	10			
Wi-Fi output power [dBm] *	18	18	18	18	18	19	15	15
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac	a/b/g/n/ac	a/b/g/n/ac			b/g/n	b/g/n	b/g/n
Wi-Fi band [GHz]	2.4 and 5	2.4 and 5	2.4 and 5			2.4	2.4	2.4
Maximum Wi-Fi channel width [MHz]	80	80	80			20	20	20
LTE filter	o		o	o	o	•		
Antenna type (see footnotes)	2p	2 U.FL	2p	2p	3p	pin	metal	metal
OS support								
Android / Linux drivers	•	•	•	•	•	•	•	•
RTOS (via NXP i.MX RT MCUs)	•	•				•	•	•
QNX (via third party)	•	•	•	•	•			
Interfaces								
High-speed UART ^B	1	1	1	1	1			
PCIe ^W			1		1			
SDIO [version] ^W	v3	v3	v3			v2	v2	v2
PCM/I2S (Bluetooth audio)	1	1	1	1	1			
USB 2.0						1	1	1
Features								
Bluetooth long range								
Micro Access Point [max connects]	8	8	10	10	10	8	8	8
AES hardware support	•	•	•	•	•	•	•	•
Wi-Fi direct	•	•	•	•	•	•	•	•
Wi-Fi 802.11mc								
WPA3	•	•				•	•	•
Factory-assigned MAC address in OTP	•	•	•	•	•	•	•	•
Factory calibrated RF in OTP	•	•	•	•	•	•	•	•
Simultaneous STA/AP roles	•	•	•	•	•	•	•	•
2x2 MIMO			•	•	•			
Dual MAC			•	•				

B = Bluetooth only
W = Wi-Fi only

2p = 2 antenna pins, one each for Bluetooth and Wi-Fi
3p = 3 pins, 2 for Wi-Fi and 1 for Bluetooth antenna
U.FL = U.FL connector(s) for external antenna

pin = pin for external antenna
metal = Metal PIFA antenna
W/O = without optional features

o = On request

* = EIRP for embedded antennas; conducted for pins and connectors