

Bluetooth 6.0, WiFi 6, and LoRa Modules

- [BM20C,BM20E,BM20M](#) nRF54LM20A Bluetooth 6.0 modules: Cortex M33, at 128MHz; 2036KB flash, 512KB RAM; +8dBm TX power, -96 dBm receiver sensitivity at 1Mbps; USB port at 480 Mbps, 14-bit ADC.
- [BM20BC,BM20BF,BM20BP](#): nRF54LM20B module with an embedded Axon NPU for edge AI applications.
- [BM20NE/BM20BNE](#): nRF54LM20A/nRF54LM20B modules with a Nordic nRF21540 power amplifier.
- [BM20XE/BM20BXE](#): nRF54LM20A/nRF54LM20B modules with a Skyworks SKY66403 power amplifier.

- [BMH20C,BMH20E](#), nRF54H20 Bluetooth 6.0 module. Dual core Cortex M33 up to 320 MHz.
- [WM02C20C/WM02C20BC](#): nRF7002 WiFi 6 and nRF54LM20A/nRF54LM20B BLE 6.0 combo modules.
- [LB51E20BC02C](#): nRF9151 LTE/NTN, nRF54LM20B Bluetooth 6.0 and nRF7002 WiFi 6 combo module for M.2 connector.
- [LBG20BC](#): IP67 gateway with an optional rechargeable battery and is solar panel ready. It supports LTE, NTN, BLE 6.0, WiFi 6, and CAN interfaces.



Nordic nRF54LM20A/B Bluetooth 6.0 Modules.

Module	BM20C	BM20E	BM20F	BM20M	BM20BC	BM20BF	BM20BE
Size, mm	10x16.2	10x15.0	10(15.2)x20.8	10x14.0	10x16.2	10(15.2)x20.8	10x15.0
SoC	nRF54LM20A	nRF54LM20A	nRF54LM20A	nRF54LM20A	nRF54LM20B	nRF54LM20B	nRF54LM20B
SoC features	nRF54LM20A, Cortex M33 at 128MHz; 2036KB flash, 512 KB RAM; USB port at 480 Mbps.						
Features	Max. TX power, + 8 dBm; Receiver sensitivity, -96 dBm; Advanced security; NFC; channel sounding.						
GPIOs	90 LGA pins, 66 GPIOs						
Embedded crystals	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz
Antenna	Chip	u.FL	High Perf. PCB	PCB Trace	Chip	High Perf. PCB	Pads
BLE Range, 2Mbps (Note1)		490M (ANT000)	358M			358M	490M(ANT000)
BLE range, 1 Mbps	189M	686M, est.	501M, est.	110M	189M	501M, est.	686M, est.
Oper. Temp (Note2)	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C
Certifications	BLE + 802.15.4; FCC,ISED,CE,UK,RCM,TELEC,NCC; Pending KCC.						
Eval board	EV-BM20BC	EV-BM20BE	EV-BM20BF	EV-BM20BM	EV-BM20BC	EV-BM20BF	EV-BM20BE
Availability	Production	Production	Production	Production	Production	Production	Production

Nordic nRF54LM20A/B with a Power Amplifier Bluetooth 6.0 Modules.

module	BM20NE	BM20BNE	BM20XE	BM20BXE
SoC	nRF54LM20A+21540	nRF54LM20B+21540	54LM20A+SKY66403	54LM20B+SKY66403
Size	10x24mm	10x24mm	10x24mm	10x24mm
Antenna	Chip+u.FL	Chip+u.FL	Chip+u.FL	Chip+u.FL
Max. TX power				
BLE range, 2Mbps	1210M (ANT000)	1210M (ANT000)	1250M(ANT000)	1250M(ANT000)
BLE range, 1 Mbps	1690M (ANT000), est.	1690M (ANT000), est.	1750M(ANT000), est.	1750M(ANT000), est.
Certifications				
Eval board	EV-BM20BNE	EV-BM20BNE	EV-BM20BXE	EV-BM20BXE
Availability, samples	Q3, 2026	Q3, 2026	Q3, 2026	Q3, 2026

nRF54LM20A, nRF54LM20B BLE 6.0, 802.15.4 Modules



- nRF54LM20B has an embedded Axon NPU for edge AI applications.
- BM20NE and BM20BNE have a Nordic nRF21540 power amplifier.
- BM20XE and BM20BXE have a Skyworks nRF66403 power amplifier.
- Note 1: Bluetooth range measurement test site has direct line of sight up to 500 meters, and from 800 to

1280 meters. Some measured at 2Mbps to estimate 1Mbps ranges.

- Note 2: Operating temperature of nRF54LM20A/B is -40°C to +85°C. BM20C series passed all module certification testing at -40°C to +125°C.

Nordic nRF54LM20A/B Bluetooth 6.0 Modules.							
Module	BM20C	BM20E	BM20F	BM20M	BM20BC	BM20BF	BM20BE
Size, mm	10x16.2	10x15.0	10(15.2)x20.8	10x14.0	10x16.2	10(15.2)x20.8	10x15.0
SoC	nRF54LM20A	nRF54LM20A	nRF54LM20A	nRF54LM20A	nRF54LM20B	nRF54LM20B	nRF54LM20B
SoC features	nRF54LM20A, Cortex M33 at 128MHz; 2036KB flash, 512 KB RAM; USB port at 480 Mbps.						
Features	Max. TX power, + 8 dBm; Receiver sensitivity, -96 dBm; Advanced security; NFC; channel sounding.						
GPIOs	90 LGA pins, 66 GPIOs						
Embedded crystals	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz	32M + 32 kHz
Antenna	Chip	u.FL	High Perf. PCB	PCB Trace	Chip	High Perf. PCB	Pads
BLE Range, 2Mbps (Note1)		490M (ANT000)	358M			358M	490M(ANT000)
BLE range, 1 Mbps	189M	686M, est.	501M, est.	110M	189M	501M, est.	686M, est.
Oper. Temp (Note2)	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C	-40°C to +85/125°C
Certifications	BLE + 802.15.4; FCC,ISED,CE,UK,RCM,TELEC,NCC; Pending KCC.						
Eval board	EV-BM20BC	EV-BM20BE	EV-BM20BF	EV-BM20BM	EV-BM20BC	EV-BM20BF	EV-BM20BE
Availability	Production	Production	Production	Production	Production	Production	Production

Nordic nRF54LM20A/B with a Power Amplifier Bluetooth 6.0 Modules.

module	BM20NE	BM20BNE	BM20XE	BM20BXE
SoC	nRF54LM20A+21540	nRF54LM20B+21540	54LM20A+SKY66403	54LM20B+SKY66403
Size	10x24mm	10x24mm	10x24mm	10x24mm
Antenna	Chip+u.FL	Chip+u.FL	Chip+u.FL	Chip+u.FL
Max. TX power				
BLE range, 2Mbps	1210M (ANT000)	1210M (ANT000)	1250M(ANT000)	1250M(ANT000)
BLE range, 1 Mbps	1690M (ANT000), est.	1690M (ANT000), est.	1750M(ANT000), est.	1750M(ANT000), est.
Certifications				
Eval board	EV-BM20BNE	EV-BM20BNE	EV-BM20BXE	EV-BM20BXE
Availability, samples	Q3, 2026	Q3, 2026	Q3, 2026	Q3, 2026

Nordic nRF7002 and nRF54LM20A/B WiFi 6 and Bluetooth 6.0 Modules.

module	WM02C20BC/WM02C20C	WM02E20BE/WM02E20E	WM02P20BP/WM02P20P
SoC	nRF54LM20A+nRF7002	nRF54LM20A+nRF7002	nRF54LM20B+nRF7002
Size	10.0(14.0)x25.2mm		
Antenna	Chip+Chip	u.FL+u.FL	Pads + Pads
Max. TX power			
Certifications			
Eval board	EV-WM02C20BC	EV-WM02E20BE	EV-WM02P20BP
Availability, samples	Stock		

nRF54H20 BLE 6.0, 802.15.4 Modules



- No external component required. It uses minimum host PCB area. Both 32 MHz and 32.768 kHz crystals embedded.
- Will be certified for BLE and 802.15.4

Nordic nRF54H20 Bluetooth 6.0 Modules. No external component required.

Module	BMH20E	BMH20C	BMH20F
Size, mm	10x15.0	10x16.2	10(15.2) x 20.8
SoC	nRF54H20, dual core Cortex M33, up to 320MHz; dual core RISC-V, up to 320 MHz		
Memory	1120KB total RAM, 2MB flash		
Features	USB at 480Mbps; a CAN FD controller; 14 bit ADC; I3C interfaces; PSA level 3 security;		
Features	NFC; Directional finding; Audio PLL, 2 x TDM, PDM; High speed SPIs, SPIM, UART;		
Features	SIMIF smart card interfaces;		
Embedded crystals	32M+32K	32M+32K	32M+32K
GPIO, pins	64 GPIOs; 90 LGA pins		
Antenna	PCB Trace	Chip	High Perf. PCB
Range,1Mbps/125kbps	500/1200 meters, est.	1100/3000 meters,est.	
Max TX, SoC	+10 dBm	10 dBm	
Receiver sensitivity, at 1Mbps	-100 dBm	-100 dBm	
Certifications			
Eval board	EV-BMH20E	EV-BMH20C	
Availability, samples		Samples	

nRF54L15 BLE 6.0, 802.15.4 Modules



- nRF54L15 has more flash memories, higher processor speed, better receiver sensitivity, lower power consumption, and better security supports than nRF52840.
- BM15C is footprint upgradeable to BM20C (nRF54LM20A).
- BM15C and BM05M Series modules are certified for both Bluetooth and 802.15.4.
- BM05M, an nRF54L05 module, has less memories at lower cost.

Nordic nRF54L15 Bluetooth 6.0 Modules.

Nordic nRF54L15 Bluetooth 6.0 Modules.					
Module	BM15C	BM15E	BM15M	BM05M	BM05F
Size, mm	10x15.8	10x15.0	10x14	10.0 x 14.0	10.0(15.0) x 20.0
SoC features	nRF54L15, Cortex M33 at 128MHz; 1524KB flash, 256 KB RAM			nRF54L05,Cortex M33,128MHz;500KB flash,96KB RAM	
Features	Max. TX power, + 8 dBm; Receiver sensitivity, -96 dBm; Advanced security; NFC; Channel sounding.				
GPIOs	45 LGA pins, 32 GPIOs				
Embedded crystals	32M	32M	32M	32M	32M
Peak TX power, radiated	+12.01 dBm	+13.71 dBm	+7.15 dBm	+7.90 dBm	+12.5 dBm
Antenna	High perform. chip	u.FL	PCB Trace	PCB Trace	High perform. PCB
BLE Range,1Mbps/125Kbps	1000/2500 meters, est.		300/900 meters, est.	300/900 meters, est.	1000/2500 meters, est.
Operating temp.	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C
Certifications	BLE + 802.15.4; FCC,ISED,CE,UK,RCM,TELEC,NCC				
Eval board	EV-BM15C	EV-BM15E	EV-BM15M	EV-BM05M	EV-BM15F
Availability	Production	Production	Production	Production	Production

Nordic nRF54L15 Compact Bluetooth 6.0 Modules. No external component required.

Module	BC15C	BC15E	BC15M	BC15P
Size, mm	6.0x11.0	6.0x10.5	6.0x9.6	6.0x6.3
SoC features	nRF54L15, Cortex M33 at 128MHz; 1524KB flash, 256 KB RAM			
Features	Max. TX power, + 8 dBm; Receiver sensitivity, -96 dBm; Advanced security; NFC; Channel sounding.			
GPIOs	30 GPIOs; 36 LGA pins			
Embedded crystals	32M+32K	32M+32K	32M+32K	32M+32K
Antenna	Chip	u.FL	PCB trace	Pads
Max TX power, radiated	+7.05 dBm	+14.01 dBm (ANT060)	+5.64 dBm	+14.01 dBm (ANT060)
Range, 1Mbps (2 ways)	90 meters	>1000M, est.	90 meters	>1000 M, est.
Operating temp.	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C
Certifications	BLE + 802.15.4; FCC with SAR, ISED, CE/UK with SAR, RCM, TELEC, NCC; SRR (BC15C only)			
Eval board	EV-BC15C	EV-BC15E	EV-BC15M	EV-BC15P
Availability	Production	Production	Production	Production

Dual Band WiFi 6 and BLE 5.4/WiFi 6 Combo Modules



Nordic nRF7002 supports IEEE 802.11 a/b/g/n/ac/ax in both 2.4 GHz and 5 GHz frequency bands.

- Combo module integrates an nRF5340 to support 4 radio interfaces, 5GHz WiFi 6, 2.4 GHz WiFi 6, BLE, and 802.15.4.
- WT02C40C, WT02E40E, WT02E40C are footprint upgradeable from BLE modules BT40F and BT40N.
- Companion module WM02C and WM02E are managed by a host MCU through SPI interface.

- For low cost applications, uses a BM15M or a BT40
- For long range applications, use a BT40N with an nRF21540
- WiFi ranges are the average of 12 measurements with an iPhone 14. Module antenna points to the sky and is rotated by 30 degrees after each measurement.
- WM Series WiFi ranges are measured with Nordic SDK 2.50, default settings.

Nordic nRF7002 WiFi 6 Companion Modules. No external component required.

module	WM02C	WM02V	WM02E	WM02F	WM02P
Size, mm	12.0x19.1x2.0	12.0x25.3x2.0	12x16.8	12.0 (15.1) x 24..3	12.0x12.9x2.0
SoC	nRF7002	nRF7002	nRF7002	nRF7002	nRF7002
Antenna	Chip, horizontal	Chip, vertical	u.FL	High performance PCB	Pads
2.4GHz WiFi range	549 meters	505 meters	550 meters	493 meters	
5GHz WiFi range	413 meters	498 meters	510 meters	375 meters	
Carrier frequency	Trimmed to +/- 2 ppm in the 5GHz band				
Operating temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Certifications	WiFi 2.4 GHz + 5GHz; FCC, ISCED, CE, UK, TELEC, RCM, NCC				
Eval board	EV-WM02C	EV-WM02V	EV-WM02E	EV-WM02F	EV-WM02P
Reel size, pcs	1000	1000	1000	1000	1000
Availability	Production	2025	Production	Production	Production

Nordic nRF7002 WiFi 6 and nRF5340 BLE 5.4 Combo Modules. No external component required.

module	WT02E40E	WT02C40C	WT02V40V	WT02E40C	WT02P40P
W(antenna)xHxT, mm	14.0(15.5)x23.0x2.0	14.0(25.0)x24.8x2.0	14.0(16.4)x30.5x2.0	14.0(15.5)x24.5x2.0	14(14)x18.5x2.0
SoC	nRF5340+7002	nRF5340+7002	nRF5340+7002	nRF5340+7002	nRF5340+7002
MCU/Flash/RAM	M33/256/64KB	M33/256/64KB	M33/256/64KB	M33/256/64KB	M33/256/64KB
MCU 2/Flash/RAM	M33/1024/512KB		M33/1024/512KB	M33/1024/512KB	M33/1024/512KB
NFC, 802.15.4, USB, CryptoCell	Yes	M33/1024/512KB	Yes	Yes	Yes
GPIO pins	48, LGA	48, LGA	48, LGA/CAS	48, LGA/CAS	48, LGA/CAS
WiFi 6 frequencies	2.4GHz+5 GHz	2.4GHz+5 GHz	2.4GHz+5 GHz	2.4GHz+5 GHz	2.4GHz+5 GHz
Antenna, WiFi/BLE	u.FL/u.FL	Chip/Chip, Horizontal	Chip/Chip, Vertical	u.FL/Chip	Pads/Pads
2.4 GHz WiFi range					
5GHz WiFi range					
BLE range at 1Mbps					
Operating temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
DCDC inductors, power switch	Integrated	Integrated	Integrated	Integrated	Integrated
Crystals	32M+32K+40M	32M+32K+40M	32M+32K+40M	32M+32K+40M	32M+32K+40M
Certifications	BLE + 802.15.4 + WiFi 2.4 GHz + 5 GHz; FCC, ISCED, CE, UK, TELEC, RCM, NCC				
Eval board	EV-WT02E40E	EV-WT02C40C	EV-WT02V40V	EV-WT02E40C	EV-WT02P40P
Reel size, pcs	1000	500	500	1000	1000
Availability	Production	Production	Production	Production	Production

nRF5340 BLE 5.4 Modules



- No external component required. It uses minimum host PCB area. Both 32 MHz and 32.768 kHz crystals embedded. DCDC converter inductors are embedded.
- Compact nRF5340 modules: [BC40C](#), [BC40M](#), [BC40P](#);
- Long Range nRF5340 modules: [BT40](#), [BT40F](#), [BT40E](#), BLE and 802.15.4 certified.
- nRF5340 with nRF21540 power amplifier: BT40N, BT40NE, BLE and 802.15.4 certified.
- **AP**protect: All nRF5340 modules support approtect.

Nordic nRF53 Bluetooth 5.3 Modules. No external component required. Certified for both BLE and 802.15.4.

Module	BT40	BT40F	BT40E	BT40N	BT40NE
AP protect	BT40	BT40F	BT40E	BT40N	BT40NE
Size, mm	14x16x2.0	15x21x2.0	14x16x2.0	15x29.9x2.0	15x29.9x2.0
SoC	nRF5340	nRF5340	nRF5340	nRF5340+21540	nRF5340+21540
MCU/Flash/RAM	M33/256/64KB	M33/256/64KB	M33/256/64KB	M33/256/64KB	M33/256/64KB
MCU 2/Flash/RAM	M33/1024/512KB	M33/1024/512KB	M33/1024/512KB	M33/1024/512KB	M33/1024/512KB
NFC,802.15.4,USB	Yes	Yes	Yes	Yes	Yes
Directional Finding	Yes	Yes	Yes	Yes	Yes
CryptoCell-312	Yes	Yes	Yes	Yes	Yes
GPIO, pins	48, LGA/CAS	48, LGA/CAS	48, LGA/CAS	48, LGA/CAS	48, LGA/CAS
Antenna	PCB Trace/u.FL	High Perf. Trace	PCB Trace/u.FL	PA+PCB	PA+PCB+u.FL
Range,1Mbps	100 M, est.	700 meters, est.	1000 M, est.	>1100 meters	>1100 meters
Max TX, conducted, FCC	+3.4 dBm	+3.4 dBm	+3.4 dBm	+19.1 dBm	+19.1 dBm
Max TX, radiated, FCC	0 dBm	+4.3 dBm	+9.4 dBm	+20.0 dBm	+25.1 dBm
Operating temp.	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C
peak current RX	2.6 mA	2.6 mA	2.6 mA		
peak current TX	3.2 mA, 0dBm	3.2 mA, 0 dBm	3.2 mA, 0dBm		
DCDC inductors VDD,VDDH	Integrated	Integrated	Integrated	Integrated	Integrated
32.768kHz crystal	Integrated	Integrated	Integrated	Integrated	Integrated
Certifications	FCC, ISCED, CE, RCM, TELEC (BLE+ 802.15.4), QDID			FCC, ISCED, CE, RCM, TELEC (BLE+ 802.15.4), QDID	
Eval board	EV-BT40	EV-BT40F	EV-BT40E	EV-BT40NE	EV-BT40NE
Availability	Production	Production	Production	Production	Production

Nordic compact nRF53 Bluetooth 5.3 Modules. No external component required.

Module	BC40C	BC40M	BC40P
AP protect	BC40C	BC40M	BC40P
Size, mm	8.4x11.5x1.6	8.4(10.1)x12.7x1.6	8.4x9x1.6
SoC	nRF5340	nRF5340	nRF5340
MCU/Flash/RAM	M33/256/64KB	M33/256/64KB	M33/256/64KB
MCU 2/Flash/RAM	M33/1024/512KB	M33/1024/512KB	M33/1024/512KB
NFC,802.15.4,USB	Yes	Yes	Yes
Directional Finding	Yes	Yes	Yes
CryptoCell-312	Yes	Yes	Yes
GPIO pins	48, LGA	48, LGA	48, LGA
Antenna	Chip	PCB	Pads for external
Range,1Mbps			
Max. TX power, FCC	+3.60 dBm	+3.60 dBm	+3.60 dBm
Operating temp.	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C
peak current RX	2.6 mA	2.6 mA	2.6 mA
peak current TX	3.2mA, +0dBm	3.2mA, +0dBm	3.2mA, +0dBm
DCDC inductors VDD,VDDH	Integrated	Integrated	Integrated
32.768kHz crystal	Integrated	Integrated	Integrated
Certifications	FCC, IC, CE, JRAU, QDID	FCC, IC, CE, JRAU, QDID	FCC, IC, CE, JRAU, QDID
Eval board	EV-BC40C	EV-BC40M	EV-BC40P
Availability	Production	Production	Production

The operating temperature of nRF52833 QIAA is specified at -40°C to +105°C. BM833F-T and BM833P-T use crystal and RF components with -40°C to +125°C operating temperature. Bluetooth carrier frequencies are measured to be within specifications (+/- 50 ppm) from -40°C to +125°C. Bluetooth data transmission and reception are also verified.

However, BM833F-T and BM833P-T are not certified for automobile applications.

Nordic nRF52 BM Series, Low Cost, Compatible Footprint

Modules	BM833	BM833E	BM833F	BM833F-T	BM833P-T
APprotect	BM833-p	BM833E-p		BM833F-T	BM833P-T
Sizes, mm	10.2x15x1.9	10.2x15x1.9	15x20.6x1.9	15x20.6x1.9	10.2x11.0x1.9
SoC	nRF52833	nRF52833	nRF52833	nRF52833	nRF52833
Flash/RAM	512KB/128KB	512KB/128KB	512KB/128KB	512KB/128KB	512KB/128KB
NFC/IEEE 802.15.4	Yes	Yes	Yes	Yes	Yes
GPIO pins	42	42	42	42	42
Pins	LGA	LGA	LGA	LGA	LGA
Antenna	PCB	u.FL	PCB Trace	PCB trace	pads
Range, 125kbps		3400M, est.	2300M, est.	2300M, est.	
Max. TX power, FCC	+8.13 dBm	+8.13 dBm	+8.13 dBm	+8.43 dBm	+8.43 dBm
peak current RX	4.6mA	4.6mA	4.6mA	4.6 mA	4.6 mA
peak current TX	4.8mA, +0dBm	4.8mA, +0dBm	4.8 mA, +0 dBm	4.8 mA at +0dBm	4.8 mA at +0dBm
DCDC inductors	Integrated	Integrated	Integrated	Integrated	Integrated
Operating temp.	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +125°C	-40°C to +125°C
32.768kHz crystal	Ext.	Ext.	Ext.	Ext	Ext
Certifications	FCC, IC, CE, JPAU, NCC, KCC, QDID, SAF	FCC, IC, CE, JPAU, NCC, KCC, QDID	FCC, IC, CE, JPAU, NCC, KCC, QDID	FCC, IC, CE, JPAU, NCC, KCC, QDID	FCC, IC, CE, JPAU, NCC, KCC, QDID
Eval board	EV-BM833	EV-BM833E	EV-BM833F	EV-BM833F	EV-BM840P-T
Availability	Production	Production	Production	Production	Production

Modules	BM833A	BM833AF	BM832A	BM832	BM832E
APprotect	BM833A	BM833AF	BM832A-p	BM832-p	BM832E-p
Sizes, mm	10.2x15x1.9	15x20.8x1.9	10.2x15x1.9	10.2x15x1.9	10.2x15x1.9
SoC	nRF52811	nRF52811	nRF52810	nRF52832	nRF52832
Flash/RAM	192KB/24KB	192KB/24KB	192KB/24KB	512KB/64KB	512KB/64KB
NFC/802.15.4	No	No	No	Yes	Yes
GPIO pins	32	32	32	32	32
Pins	LGA	LGA	47, LGA	47, LGA	47, LGA
Antenna	PCB Trace	PCB Trace	PCB trace	PCB trace	PCB u.FL
Range,125kbps	680M, est.	1400M, est.	340 meters	340 meters	
Ant at 1.52 m			270 meters	270 meters	
Max. TX power, FCC	+4.77 dBm	+4.77 dBm	+3.98 dBm	+3.98 dBm	+3.98 dBm
peak current RX	4.6mA	4.6mA	5.4 mA	5.4 mA	5.4 mA
peak current TX	4.6mA, +0dBm	4.6mA, +0dBm	7.5mA, +4dBm	7.5mA, +4dBm	7.5mA, +4dBm
DCDC inductors	Integrated	Integrated	Integrated	Integrated	Integrated
32.768kHz crystal	Ext.	Ext.	Ext.	Ext.	Ext.
Certifications	FCC,IC,CE,JP,PAU,QDID	FCC,IC,CE,JP,PAU,QDID	FCC,IC,CE,JP TELECOM, AU, Korea KCC, Taiwan NCC, QDID, SAR		
Eval board	EV-BM833A	EV-BM833AF	EV-BM832A	EV-BM832	EV-BM832E
Availability	Production	Production	Production	Production	Production

Modules	BM840	BM840P
APprotect	BM840	BM840P
Sizes, mm	10.2x15x1.9	10.2x15x1.9
SoC	nRF52840	nRF52840
Flash/RAM	1MB/256KB	1MB/256KB
NFC/IEEE 802.15.4	Yes	Yes
GPIO pins	30	30
Pins	LGA	LGA
Antenna	PCB trace	pads
Max. TX power, FCC	+8.0 dBm	+8.0 dBm
peak current RX	4.6 mA	4.6 mA
peak current TX	4.8 mA at +0dBm	4.8 mA at +0dBm
DCDC inductors	Integrated	Integrated
32.768kHz crystal	Ext	Ext
Certifications	FCC,IC,CE,JPAU,QDID	FCC,IC,CE,JPAU,QDID
Eval board	EV-BM840	EV-BM840P
Availability	Production	Production

[illegible]

nRF52 BT Series, Long Range, Full Size with nRF21540 Modules



BT Series modules are full size with Bluetooth range up to 4500 meters. All BT modules have compatible footprint. An nRF52 module can be upgraded to an nRF53 module with a power amplifier or a BLE 5.3-WiFi 6 combo. BT modules are widely used in Fanstel pre-certified, market ready M.2 modules, basic, battery-powered, and PoE gateways.

- **M.2 modules:** nRF9160 + BT840F: [LN60E840F](#).
- **IP67 Battery-powered BLE-LTE-LoRa gateways** [SL40F6](#).

- **Medical IoT gateways:** [BLG840FB4](#).
- **IP65 BLE-LoRa to LTE, WiFi, PoE gateways** [LEWR840F6P](#).
- **BLE to WiFi 6 matter gateways:** BWG02C40F.
- Certified for both BLE and Thread, BT840F and BT840N Series are ready for Matter applications.

Nordic nRF52 BT Series, compatible footprint, upgradeable features and range

BLE 5 modules	BT832	BT832F	BT832A	BT832AF
APprotect	BT832-p	BT832F-p	BT832A-p	BT832AF-p
Sizes, mm	14x16x1.9	15x20.8x1.9	14x16x1.9	15x20.8x1.9
SoC	nRF52832	nRF52832	nRF52810	nRF52810
Flash/RAM	512KB/64KB	512KB/64KB	192KB/24KB	192KB/24KB
NFC	Yes	Yes	No	No
GPIO pins	32	32	32	32
Pins	40, CAS/LGA	40, CAS/LGA	40, CAS/LGA	40, CAS/LGA
Antenna	PCB trace	PCB trace	PCB trace	PCB trace
Range, 1 Mbps	100 meters	760 meters	100 meters	760 meters
Ant. at, 1.52m		390 meters		390 meters
Max. TX power, FCC	+2.55 dBm	+2.55 dBm	+2.55 dBm	+2.55 dBm
peak current RX	5.4 mA	5.4 mA	5.4 mA	5.4 mA
peak current TX	7.5mA, +4dBm	7.5mA, +4dBm	7.5mA, +4dBm	7.5mA, +4dBm
DCDC inductors	Integrated	Integrated	Integrated	Integrated
32.768kHz crystal	Ext.	Ext.	Ext.	Ext.
Certifications	FCC,IC,CE,JPAU,QDID	FCC,IC,CE,JPAU,QDID	FCC,IC,CE,JPAU,QDID	FCC,IC,CE,JPAU,QDID
Eval board	EV-BT832	EV-BT832F	EV-BT832A	EV-BT832AF
Availability	Production	Production	Production	Production

Nordic nRF52 BT Series, compatible footprint, upgradeable features and range. Certified for BLE and 802.15.4.

BLE 5 modules	BT840F	BT840	BT840E	BT840N	BT840NE
APprotect	BT840F-p	BT840-p	BT840E-p	BT840N	BT840NE
Sizes, mm	15x20.8x1.9	14x16x1.9	14x16x1.9	15x29.9x1.9	15x29.9x1.9
SoC	nRF52840	nRF52840	nRF52840	nRF52840+21540	nRF52840+21540
MCU/flash/RAM	M4F/1MB/256KB	M4F/1MB/256KB	M4F/1MB/256KB	M4F/1MB/256KB	M4F/1MB/256KB
CryptoCell 310	Yes	Yes	Yes	Yes	Yes
IEEE 802.15.4,USB,NFC	Yes	Yes	Yes	Yes	Yes
GPIO pins	48	48	48	39	39
Pins	61, CAS/LGA	61, CAS/LGA	61, CAS/LGA	61, CAS/LGA	61, CAS/LGA
Antenna	PCB trace	PCB trace	u.FL	PA + PCB	PA + PCB+u.FL
Range, 1 Mbps	1000 meters	150 meters	>1000 meters, est.	1170 meters	>1100 meters, est.
Ant. at, 1.52m	390 meters	120 meters			
Range,125Kbps	2300 meters	320 meters	>2300 meters, est.	>4500 M, est.	>4500 M, est.
Ant at 1.52m	640 meters	210 meters			
Max. TX power, conducted	+8.49 dBm	+8.49 dBm	+8.49 dBm	+20.6 dBm	+20.6 dBm
Max. TX power, radiated	+9.4 dBm	+5.0 dBm	+14.5 dBm	+21.5 dBm	+26.6 dBm
peak current RX	4.6 mA	4.6 mA	4.6 mA		
peak current TX	13.6mA +8dBm	13.6mA +8dBm	13.6mA +8dBm		
DCDC inductors	Integrated	Integrated	Integrated	Integrated	Integrated
32.768kHz crystal	Ext.	Ext.	Ext.	Integrated	Integrated
Certifications	FCC,ISED,CE,RCM,TELEC (BLE+ 802.15.4), KCC, NCC, Anatel, QDID			FCC,ISED,CE,RCM,TELEC (BLE+ 802.15.4), QDID	
Eval board	EV-BT840F	EV-BT840	EV-BT840E	EV-BT840NE	EV-BT840NE
Availability	Production	Production	Production	Production	Production

Modules with Skyworks PA

- nRF52832, nRF52840 with Skyworks power amplifier.

Nordic nRF52 BT Series, compatible footprint, upgradeable features and range

BLE 5 modules	BT832X	BT832XE	BT840X	BT840XE
AP protect	BT832X-p	BT832XE-p	BT840X-p	BT840XE-p
Sizes, mm	15x28x1.9	15x28x1.9	15x28x1.9	15x28x1.9
SoC	nRF52832+SKY66112	nRF52832+SKY66112	nRF52840+SKY66112	nRF52840+SKY66112
Flash	512KB	512KB	1MB	1MB
RAM	64KB	64KB	256KB	256KB
CryptoCell 310			Yes	Yes
IEEE 802.15.4, USB			Yes	Yes
NFC	Yes	Yes	Yes	Yes
GPIO pins	29	29	45	45
Pins	40, CAS/LGA	40, CAS/LGA	61, CAS/LGA	61, CAS/LGA
Antenna	PCB trace	u.FL	PCB Trace	u.FL
Range, 1 Mbps	1140 meters	1140 meters	1170 meters	1170 meters
Ant. at, 1.52m	1120 meters	1120 meters	900 meters	900 meters
Range, 125Kbps			>4500 M	>4500 M
Ant at 1.52m			1240 meters	>1240M
Max. TX power, conducted	+18.75 dBm	+18.75 dBm	+21.0 dBm	+21 dBm
Max. TX power, radiated		+24.75 dBm		+27 dBm
peak current RX				
peak current TX	95mA, +20dBm	95mA, +20dBm		
DCDC inductors	Integrated	Integrated	Integrated	Integrated
32.768kHz crystal	Integrated	Integrated	Integrated	Integrated
Certifications	FCC, IC, QDID	FCC, IC, QDID	FCC, IC, CE, AU, QDID	FCC, IC, CE, AU, QDID
Eval board	EV-BT832X	EV-BT832XE	EV-BT840X	EV-BT840XE
Availability	Production	Production	Production	Production

Semtech LoRa Modules

- **LR62E**: SX1262 LoRa module with an u.FL.
- **LR62E1**: SX1262 LoRa module with a TCXO for a better carrier frequency stability. An u.FL connector for external antenna.

LR62X1E Series Modules

- **LR62X1E** is developed as a replacement for LR62XE. It is FCC certified at +29.98 dBm. When used with ANT088, an antenna with circular polarization, the maximum transmission power is +35.80 dBm. It is

not footprint compatible with LR62XE. A new host PCB design is required. No firmware change is required.

- **LR62X2C, LR62X2E, LR62X2P**, SX1262 + PA. CE compliant for max. TX power at +26.97 dBm in the 869.400 to 869.650 MHz range.
- EV board **EV-LR62X1E** is without an M.2 module. The M.2 module is available separately.

LoRa SX1262 + PA Modules

Modules	LR62X1E	LR62X1P	LR62X1C	LR62X2E	LR62X2P	LR62X2C
Antenna conn.	u.FL	Pads	Integrated	u.FL	Pads	Integrated
Size,mm	10.0(14.0)x22.3	10.0(14.0)x22.3	10.0(14.0)x29.0	10.0(14.0)x22.3	10.0(14.0)x22.3	10.0(14.0)x29.0
TX,conducted	+29.98 dBm	+29.98 dBm	+29.98 dBm	+26.07 dBm	+26.07 dBm	+25.70 dBm
Antenna	ANT088	ANT088	Chip	ANT025	ANT025	Chip
MaxTX, radiated	+35.80 dBm	+35.80 dBm	+31.30 dBm	+26.92 dBm	+26.92 dBm	+26.97 dBm
Certifications	FCC, ISED	FCC, ISED	FCC, ISED	CE	CE	CE
Operating temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
EV, EV-LR62X1E +	M262X1E840XE	M262X1E840XE	M262X1C840F	M262X2E840XE	M262X2E840XE	M262X2C840F
Availability	Production	Production	Production	Production	Production	Production

nRF52840 BLE and LoRa SX1262 + PA Combo Modules, M.2 Connector, B key

M.2 Module	M262X1C840F	M262X1E840XE	M262X2C840F	M262X2E840XE	M262840F
BLE module	BT840F	BT840XE	BT840F	BT840XE	BT840F
LoRa module	LR62X1C	LR62X1E	LR62X2C	LR62X2E	LR62
Availability	Production	Production	Production	Production	Production

Semtech SX1262 LoRa Modules

Modules	LR62E	LR62E1
Sizes, mm	10.2x15x1.9	10.2x15x1.9
SoC	SX1262	SX1262
Embedded crystal	32MHz	32MHz TCXO
Max TX power, conducted	+20.3 dBm	+20.1 dBm
Max TX power, radiated	+21.8 dBm	+21.4 dBm
Antenna	u.FL	u.FL
Certifications	FCC, ISED, RCM	FCC, ISED
Operating temp.	-40°C to +85°C	-40°C to +85°C
Eval board	EV-LR62E	
Availability	Production	Production

Semtech LLCC68 LoRa Modules

- **LR68E** series low cost LoRa modules use a Semtech LLCC68 chip. Both FCC and CE versions are available with an u.FL connector for external antenna or an integrated chip antenna. The CE version works in the 869.400 to 869.650 MHz range.
- EV board is under development using an nRF54LM20A BLE 6.0 module as a host MCU.

Module	LR68E	LR68C	LR682E	LR682C
SoC	LLCC68	LLCC68	LLCC68	LLCC68
Antenna conn.	u.FL	Integrated	u.FL	Integrated
Size,mm	10.0(14.0)x15.0	10.0(14.0)x21.6	10.0(14.0)x15.0	10.0(14.0)x21.6
TX,conducted	+21.63 dBm	+21.63 dBm	+21.30 dBm	+21.82 dBm
Antenna	ANT088	Chip	ANT088	Chip
MaxTX, radiated	+27.45 dBm	+22.95 dBm	+26.92 dBm	+23.09 dBm
Certifications	FCC, ISED	FCC, ISED	CE	CE
EV board				
Availability	Production	Production	Production	Production

LB Combo Modules: 9-radios combo supporting Cat-M, NB-IoT, 5 GHz WiFi 6, 2.4 GHz WiFi 6-BLE 6.0-802.15.4. An nRF9151, nRF54 and nRF7002 combo module for M.2 connector, B key. nRF54 GPIO pins are on the M.2 connector primarily.



LW Combo Modules: An nRF9151 LTE and nRF7002 WiFi 6 combo module for M.2 connector, B key. SPI interfaces of both modules are available at the M.2 connector. nRF9151 can control WM02C, or both modules can be controlled by an external nRF54 module. nRF9151 GPIO pins are on M.2 connector primarily.

BR Combo Modules: An nRF54 and LoRa combo module for M.2 connector, B key.

LB Combo, LTE/NTN, BLE 6.0/802.15.4, and WiFi 6, B Key					
Module	LB51E20C	LB51EH20C02C	LB51E20C02C	LB51E20XE	LB51EH20XE
M.2 size/key	3042/B	3042/B		3042/B	3042/B
LTE/BLE/WiFi module	nRF9151/BM20C	nRF9151/BMH20C/WM02C	nRF9151/BM20C/WM02C	nRF9151/BM20XE	nRF9151/BMH20XE
LTE/GNSS/BLE/WiFi antenna	u.FL/u.FL/Chip	u.FL/u.FL/Chip/Chip	u.FL/u.FL/Chip/Chip	u.FL/u.FL/PA+u.FL+chip	u.FL/u.FL/PA+u.FL+chip
Availability	Sample Q2,26	Sample Q2,26	Sample Q2,26	Sample Q2,26	Sample Q2,26

LW Combo, LTE/NTN and WiFi 6, B Key		
Module	LW51E	LW51E02C
M.2 size/key	3042/B	3042/B
LTE/WiFi module	nRF9151	nRF9151/WM02C
LTE/GNSS/WiFi antenna	u.FL/u.FL	u.FL/u.FL/Chip
Certifications		
Availability	Sample Q2, 26	Sample Q2, 26

BR Combo, LoRa and BLE 6.0/802.15.4, B Key				
Module	BR20C	BR20XE	BR20C68E	BR20C682E
M.2 size/key	3042/B	3042/B	3042/B	3042/B
BLE/LoRa module	BM20C	BM20XE	BM20C/LR68E	BM20C/LR682E
BLE/LoRa antenna	Chip	PA+u.FL+chip	Chip/u.FL	Chip/u.FL
Availability				

LN60E840F Series LTE-BLE/802.15.4 Combo Modules

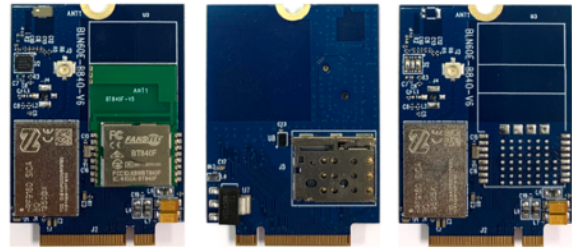
nRF52840 or nRF5340 module integrated with nRF9160 module. Bluetooth range can be > 4500 meters or 2.8 miles. An u.FL connector for external LTE antenna. A nano SIM card connector on board and SIM interface for external eSIM. GPS with integrated antenna and receiver amplifier, or an u.FL for external GPS antenna.

M262X1E840XE Series LoRa-BLE 5 Combo Module

nRF52840 and Semtech SX1262 combo module supporting BLE 5.4 and Long Range LoRa.

M.2 Connector

B key, 67 pins.



LN Modules Supporting LTE and BLE/802.15.4

Module	LN60E40F	LN60E40NE	LN60E840E	LN60E840F	LN60E840XE	LN60E
M.2 size/key	3042/B	3042/B	3042/B	3042/B	3042/B	3042/B
BLE module	BT40F	BT40NE	BT840E	BT840F	BT840XE	
BLE antenna	Integrated	u.FL+PCB+PA	u.FL	Integrated	PA + u.FL	
BLE TX power	+3.4 dBm		+8.5 dBm	+8.5 dBm	+21.0 dBm	
LTE module	nRF9160 SICA	nRF9160 SICA	nRF9160 SICA	nRF9160 SICA	nRF9160 SICA	nRF9160 SICA
LTE antenna	u.FL	u.FL	u.FL	u.FL	u.FL	u.FL
GPS antenna	u.FL	u.FL	u.FL	u.FL	u.FL	u.FL
Flash memory	16MB	16MB	None	None	None	None
Certifications	FCC,IC,TELEC (CE,RCM)		FCC,IC,TELEC (CE,RCM)	FCC,IC,TELEC (CE,RCM)	FCC,IC,(CE,RCM)	FCC,IC,TELEC (CE,RCM)
QDID	119517		108621	108621	108621	
Availability	Production		Production	Production	Production	Production

M2 Module Supporting BLE/802.15.4-LoRa

Module	M262840F	M262X840XE	M262X840F
M.2 size/key	3042/B	3042/B	3042/B
BLE module/TX	BT840F/+8.5dBm	BT840XE/+21dBm	BT840F/+8.5dBm
BLE antenna	Integrated	PA + u.FL	Integrated
LoRa module/TX	LR62E/+20.3dBm	LR62XE/+29.2dBm	LR62XE/+29.2dBm
LoRa antenna	u.FL	u.FL	u.FL
Certifications	FCC,IC,RCM	FCC,IC,RCM	FCC,IC,RCM
QDID	108621	108621	108621
Availability	Production	Production	Production

M2 Module Supporting BLE/802.15.4-LoRa

M.2 Module	M262X1C840F	M262X1E840XE	M262X2C840F	M262X2E840XE
BLE module/TX	BT840F/+8.5dBm	BT840XE/+21.0dBm	BT840F/+8.5dBm	BT840XE/+21.0dBm
LoRa module/TX	LR62X1C/+29.98 dBm	LR62X1E/+29.98dBm	LR62X2C/+26.97dBm	LR62X2E/+26.07dBm
Certifications	FCC,IC	FCC,IC	CE	CE
EV board	EV-LR62X1E	EV-LR62X1E	EV-LR62X1E	EV-LR62X1E
Availability	Production	Production	Production	Production

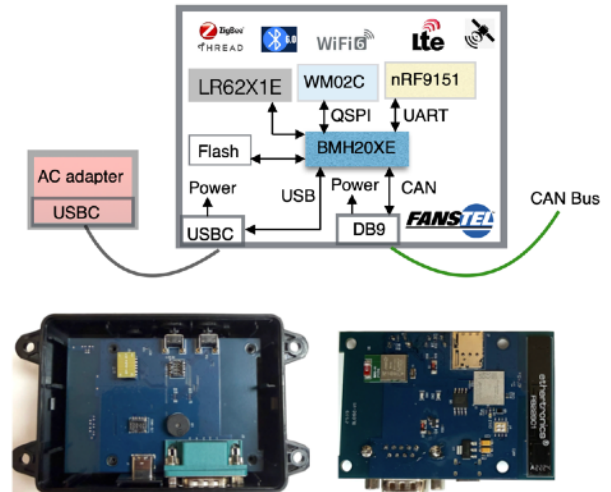
Basic BLE 6.0 to WiFi 6/LTE/NTN Gateway

Basic Gateways

BLG20C and BWG20C is an upgraded and cost reduced version of BLG840F and BWG840F, respectively. The Bluetooth protocols are upgraded to 6.0. The WiFi protocols are also upgraded to 6. Security is upgraded to PSA level 3.

Additional upgrades:

- The LTE interface can be upgraded to support satellite communication.
- The LTE antenna mounted internally.
- GNSS feature is not supported.
- The MCU is upgradeable from 128 MHz Cortex M33 to 320 MHz Cortex M33.
- CAN interface with a DB9 available..



BASIC LTE/NTN-BLE6.0-WIFI6 Gateway

Gateway	BLG20BF	BWG20BF	BLG20BXE	BLGH20C02C
Modules	BM20BC+nRF9151	BM20BF+WM20C	BM20BXE+nRF9151	BMH20C+nRF9151+WM02C
Flash memories				
Max operating temp	-40°C to +80°C			
Connector	USBC	USBC	USBC	USBC+DB9
Certifications				
Availability	Sample	Sample 4Q 2026	Sample 4Q26	Sample 4Q26

IP67 BLE 6.0,LTE,WiFi 6,LoRa Gateway

LBG Enclosure

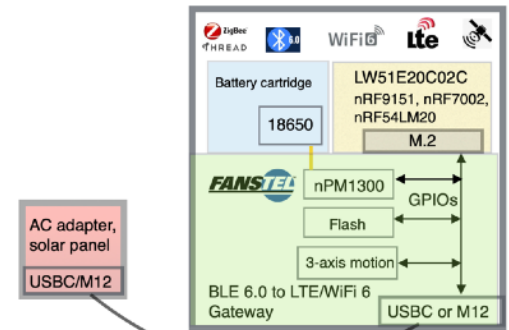
- IP67 Ingress Protection with a USBC connector. An optional M12 connector for deployment in rugged environments.
- An M.2 connector, B-key for Fanstel LB, LW, or BR LTE/NTN, Bluetooth 6.0, WiFi 6, and LoRa modules.
- An optional 18650 rechargeable battery.
- Solar panel ready.

LBG Gateways

- An LTE/NTN-WiFi6-Bluetooth gateway is created when an LB module is inserted.
- Supports for satellite communication in 2026.
- Optional GNSS.
- M12-5pins for CAN interface

BR Bridges

- A Bluetooth to LoRa bridge is created when a BR module is inserted.



LTE/NTN-BLE6.0-WiFi6 gateway with rechargeable battery				
	LBG20BC02C	LBG20BNE	LBG20BC`	LBGH20C02C
Ingress Protection/Color	IP67/yellow	IP67/yellow	IP67/yellow	
Radios	LTE/NTN/GNSS/BLE6.0/WiFi6	LTE/NTN/BLE6.0+PA	LTE/NTN/BLE6.0	LTE/NTN/BLE6.0/WiFi6
LB Module	LB51E20BC02C	LB51E20BNE	LB51E20BC	LB51EH20C02C
Power connector	USBC	USBC	USBC	M12
Max operating temp	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Mounting	Wall or pole mount	Wall or pole mount	Wall or pole mount	Wall or pole mount
Certifications				
Availability	Samples	Samples, 3Q26	Samples, 3Q26	Samples, 4Q26

BLE-LoRa to LTE-WiFi-PoE Ethernet Gateways

IP67 Industrial Multiple Network Gateways

- Basic edge computing industrial IoT gateways: IP67/ IP65 **LEW40E6P** (PoE), or IP51 LEW40E5P (PoE). BLE, 802.15.4 to LTE, WiFi, PoE gateways with dual core Cortex M33 processors up to 128 MHz. The PoE



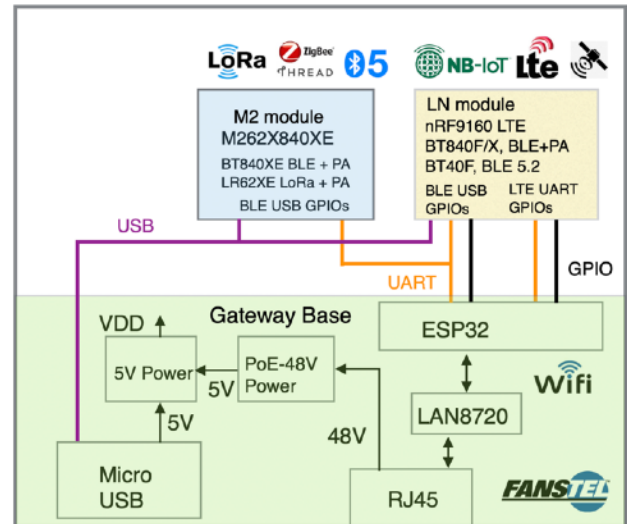
gateway enclosure is IP67 rated. A silicone shield for the cable RJ45 plug is required for IP67 rated gateway.

IP51 Industrial Multiple Network Gateways

- Basic Bluetooth to WiFi, Ethernet gateway: **EW840F5P** (PoE) or EW840F5N (Non-PoE). IP51 for indoor applications.
- Multiple radio protocols, BLE/IEEE 802.15.4, LoRa to WiFi, Ethernet, LTE gateway: **LEWR840E5P**.

OpenSource Supports

- Mongoose OS** OpenSource codes for connecting to **Fanstel, AWS, MicroSoft, or Google Cloud platforms.**
- Firmware for BLE, WiFi, LTE modules.
- Android OS apps.
- Link to download document and source codes:
<http://www.fanstel.com/download-opensource/>



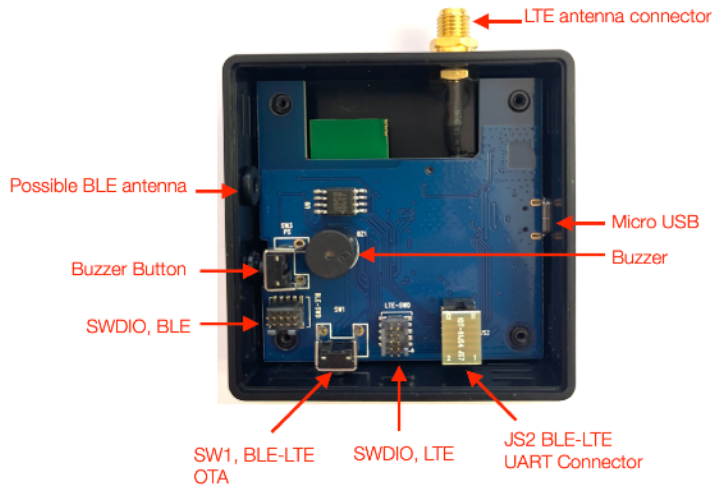
MultiNetwork, MultiProtocol Gateways with Ingress Protection

Ingress protect/color	IP51/black	IP51/black	IP51/black	IP51/black	IP65/yellow	IP65/yellow
Gateway	EW840F5N	EW840F5P	LEWR840E5P	LEW40E5P	LEW40F6P	LEWRX840XE6P
WiFi/Ethernet	ESP32M16	ESP32M16	ESP32M16	ESP32M16	ESP32M16	ESP32M16
LN Module			LN60E	LN60E40E	LN60E40F	
M2 Module	M2840F	M2840F	M262840E			
External antenna	0	0	3	2	0	3
GPS				Need ext. antenna	Need ext. antenna	
Power supply	AC adapter	PoE	PoE	PoE	PoE	PoE
Operating temp.	0°C to +40°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +85°C	-40°C to +85°C
Certifications						
QDID	108621	108621	108621	119517	119517	108621
Programming Kit	PK-LEW840X	PK-LEW840X	PK-LEW840X	PK-LEW840X	PK-LEW840X	PK-LEW840X
Availability	Production	Production	Production	Production	Production	Production

Optimized for Remote Patient Monitoring

Features for remote patient monitoring:

- Flash memory to store patient data and forward to cloud upon LTE reconnection.
- A buzzer for audio alerting and a control button.



- [BLG40FB16](#) Edge computing medical IoT gateway with dual core Cortex M33 up to 128MHz, 16 MB flash memory for local storage..

OpenSource Supports

- OpenSource codes for connecting to **Fanstel**, **AWS**, **MicroSoft**, or **Google Cloud** platforms.
- Firmware for BLE, WiFi, LTE modules.
- Android OS apps.
- Link to download document and source codes:
<http://www.fanstel.com/download-opensource/>

Bluetooth to LTE Gateways

- [BLG840FB4](#), [BLG840FB16](#), Basic LTE-M/NB-IoT to BLE 5.3/802.15.4 gateways with 4MB or 16MB flash for local storage.

Medical IoT Gateway for Remote Patient Monitoring, Bluetooth to LTE			
	BLG840FB4	BLG840FB16	BLG40FB16
LTE module	nRF9160 SICA	nRF9160 SICA	nRF9160 SICA
BLE module/TX power	BT840F/+8.5 dBm	BT840F/+8.5dBm	BT40F/+3.4 dBm
Ext. flash memory	4MB	16MB	16MB
Certifications	FCC, ISSED	FCC, ISSED	FCC, ISSED
QDID	108621, 182626	108621, 182626	119517, 182626
Programming Kit	PK-BLG840F	PK-BLG840F	PK-BLG840F
Availability	Production	Non stock	Production

nRF52840 USB Dongles

- Preloaded with Nordic USB CDC ACM secure DFU boot loader, USB dongle can be booted and firmware updated from a PC.
- **USB840F and USB840X** have pads for Tag-Connect cable TC2050-IDC-NL-050-ALL for programming nRF52840.
- Use USB840F to develop codes for **USB840M**.
- USB840F and USB840X with vertical antenna for near omni-directional range coverage.
- **BU840XE** remote dongle includes a 2-meters long USB cable, a wall mount bracket, an external antenna to maximize range by wall mounting to reduce obstruction.

nRF5340 USB Dongles

- Preloaded with Nordic USB CDC ACM secure DFU boot loader, USB dongle can be booted and firmware updated from a PC.

- **USB40F and USB40N** have pads for Tag-Connect cable TC2050-IDC-NL-050-ALL for programming nRF5340.
- USB40F and USB40N with vertical antenna for near omni-directional range coverage.
- **BU40NE** remote dongle includes a 2-meters long USB cable, a wall mount bracket, an external antenna to maximize range by wall mounting to reduce obstruction.

nRF52840 Bluetooth 5.4 USB Dongle				Remote USB Dongle
	USB840F	USB840M	USB840X	BU840XE
BLE Module	BT840F	BC840M	BT840X	BT840XE + ANT000
Size	52x21x21mm	26x15x6.0mm	52x21x21mm	60x60x22mm
LED indicators	2	1	2	2
Tag Connect pads	Yes	No	Yes	Connector
Certifications	FCC,IC,CE,RCM,TELEC,QDID	FCC,IC,CE,RCM,TELEC,QDID	FCC,IC,CE,RCM,QDID	FCC,IC,CE,RCM,QDID
Availability	Production	Production	Production	Production

nRF5340 Bluetooth 5.4 USB Dongle			Remote USB Dongle
	USB40F	USB40N	BU40NE
BLE Module	BT40F	BT40N	BT40NE + ANT000
Size	52x21x21mm	52x21x21mm	60x60x22mm
LED indicators	2	2	2
Tag Connect pads	Yes	Yes	Connector
Certifications	FCC,IC,CE,RCM,TELEC,QDID	FCC,IC,CE,RCM,TELEC,QDID	
Availability	Production	Production	

Bluetooth, LoRa, and LTE Antennas

- Most antennas include a 100 mm long u.FL to SMA adapter cable. SMA connector with panel mounting hardware.
- ANT025/ANT025P, peak gain 0.99 dBi at 915 MHz.
- ANT032 uses a P822602, globally certified with nRF9160, includes a 2-sided tape for mounting inside an enclosure.
- ANT032E uses a P822601, globally certified with nRF9160, includes panel mounting hardware.
- ANT036, dual bands WiFi antenna.
- ANT042, peak gain +4.2 dBi at 915 MHz.
- ANT088, circular polarization, +8.8 dBic at 915 MHz

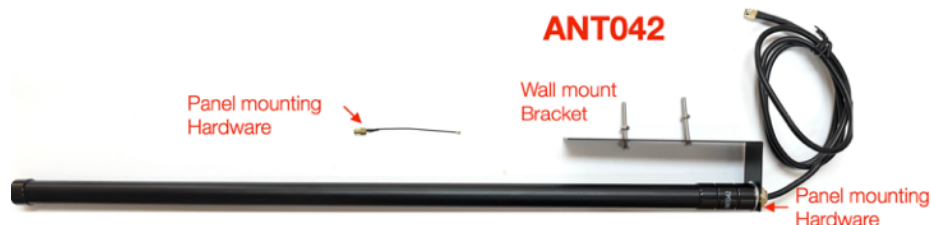
Panel mountable antenna with 100 mm long SMA to u.FL adapter cable

Antenna	Band	Length	Ingress	Certified with
ANT000	BLE, 2.4 GHz	50mm	IP67	FCC: BT840XE; CE/RCM/TELEC, BC833E, BM833E, BT840E
ANT025	LoRa, 900MHz	200mm		FCC: LR62E, LR62XE
ANT025P	LoRa, 900MHz	200mm	IP67	FCC: LR62XE
ANT032	LTE, multiple	52mm		Uses a P822601, certified with nRF9160 globally. Glued to internal wall of enclosure.
ANT032E	LTE, multiple	78mm		Uses a P822601, certified with nRF9160 globally. Panel mountable, external antenna
ANT036	WiFi, 2.4G+5G	158.8mm		All: WM02E, WM02P, WT02E40E, WT02E40C, WT02P40P
ANT042	LoRa, 900MHz	600mm		LR62X1E
ANT060	BLE, 2.4 GHz	195mm		FCC: BC833E, BM833E, BT840E, BT832XE. All: BT40E, BC40P
ANT088	LoRa 900 MHz			LR62X1E, LR62X2E, Circular Polarization



ANT088

Panel mounting Hardware



ANT042

Wall mount Bracket

Panel mounting Hardware

Panel mounting Hardware

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