

IoT²BRK3V3_eSIM BG77 LTE-M/NB2 Breakout Board





IoT²BRK3V3 is the simplest way to add cellular connectivity and GNSS to your application. It is based on the ultra-compact LTE cat M1/cat NB2 BG77 module. This 1-inch square board comes with an on-board GNSS low-noise amplifier front-end with integrated pre and post SAW filters and a GNSS ceramic antenna. External active and passive GNSS antennas can be used via the U.FL connector. The BG77 is an ultra-compact LPWA module supporting LTE Cat M1, LTE Cat NB2 and integrated GNSS. It is fully compliant with 3GPP Rel-14 specification and provides maximum data rates of 588 kbps downlink and 1119 kbps uplink. It features ultra-low power consumption by leveraging the integrated RAM/flash as well as the ARM Cortex A7 processor supporting ThreadX, achieving up to 70% reduction in PSM leakage and 85% reduction in eDRX current consumption compared to its predecessor.

Key

Benefits

- ✓ SWAP (Size, Weight, and Power) IoT solution
- ✓ Robust mounting and interface
- ✓ 3 GNSS antenna options
- ✓ On-Board eSIM
- ✓ LTE antenna U.FL connector
- ✓ USB-C interface
- ✓ Module and Network status LEDs.

Applications

- ✓ Asset Management
- ✓ Logistics
- ✓ Tracking
- √ Geo-Fence
- ✓ Wearables
- ✓ Smart Energy
- ✓ Medical Devices
- ✓ PPPoS/Hotspot

Key

Features

Cellular	Cat M1:
Technology	LTE-FDD:
	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85*
	Cat NB2:
	LTE-FDD:
	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85*
Data	Cat M1:
	Max. 588 kbps (DL)/1119 kbps (UL)
	Cat NB2:
	Max. 127 kbps (DL)/158.5 kbps (UL)
Voice	VoLTE (Cat M1 Only)
SMS	Point-to-point MO and MT
	SMS Cell Broadcast
	Text and PDU Mode
Interface	USB-C
	UART
	GPIO
	NET_STATUS STATUS
	Antennas
GNSS	GPS/GLONASS/BeiDou/Galileo/QZSS
	QuecLocator (Cell ID Positioning)
GNSS	Signal gain: 17 dB
SAW/LNA/SAW	Out-of-band rejection: +80 dBc, 1627 to 1660 MHz
	Low current consumption: 3.1 mA
Firmware	Via USB-C interface
Upgrade	DFOTA (Delta Firmware Upgrade Over-the-Air)
Power Supply	1- USB-C Receptacle
	2- 2.7 V – 3.6 V (typ. 3.3 V), 1 A at the header
I/O Voltage	2.7 V – 3.6 V
Electrical	Output Power: 21 dBm (Max.)
Characteristics	Consumption @ LTE CAT M1 (typical):
	Power Saving Mode: 3.2 μA
	Idle State: TBD

	Sleep State:
	1.63 mA @ DRX = 1.28 s
	0.76 mA @ e-I-DRX = 81.92 s, PTW = 20.48 s
	LTE Connected Mode:
	228 mA @ 21dBm, GNSS off
	Consumption @ LTE CAT NB2 (typical):
	Power Saving Mode: 3.2 μA
	Idle State: TBD
	Sleep State:
	1.5 mA @ DRX = 1.28 s
	0.79 mA @ e-I-DRX = 81.92 s, PTW = 20.48 s
	LTE Connected Mode:
	165 mA @ 21dBm, GNSS off
	GNSS: TBD
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT/LwM2M/CoAP/
Protocois	IPv6*
Operating	-35 °C to +75 °C
Temperature	
•	
Dimensions	1 inch x 1 inch (25.4 mm x 25.4 mm)
Approvals	Carrier:
	Vodafone* (Global)
	Deutsche Telekom* (Europe)
	Sprint/Verizon*/AT&T*/T-Mobile* (North America)
	Telus* (Canada)
	China Telecom*/China Mobile*/China Unicom* (China)
	SKT* (South Korea)
	NTT DOCOMO*/SoftBank*/KDDI* (Japan)
	Telstra* (Australia)
	Regulatory:
	GCF* (Global)
	CE (Europe)
	FCC/PTCRB* (North America)
	IC* (Canada)
	SRRC*/NAL*/CCC* (China)
	KC* (South Korea)
	NCC* (Taiwan, China)
	JATE/TELEC (Japan)
	RCM (Australia/New Zealand)
	NBTC* (Thailand)

^{*} Means development/on-going/plannin