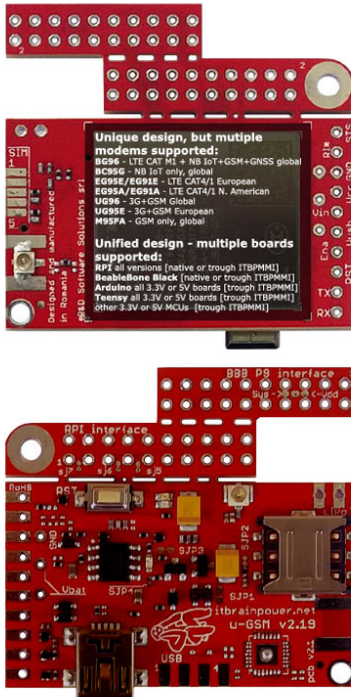


# u-GSM universal shield

ARDUINO, BEAGLEBONE & RASPBERRY universal GSM shield



**LTE CAT M1? NB IoT? LTE CAT 4? LTE CAT 1? UMTS? GSM?** Just u-GSM! But, why "u"? "u" because it's unified, ultimate, unique, unbelievable and ...unobtainable, until now!

**ALL** deployed GSM standards are supported - we've did it again! No need for different designs, just same form factor, same integration approach regardless the integrated modem, just this amazing u-GSM v2.19 by itbrainpower.net.

In addition to **RPI** and **BBB embedded interfaces**, the u-GSM shield shares the same ITBMM interface [itbrainpower.net modular modem interface] with all our previous modular modems:

- 4G / LTE CAT4 and 4G / LTE CAT 1 versions ([I-LTE shield](#)),
- 3G / UMTS version ([d-u3G shield](#)),
- dual SIM GSM only version ([c-uGSM dual SIM shield](#)) and
- GSM + BTH 3.0 version ([h-nanoGSM shield](#)).

Through the ITBPM interface, following accessories may be plugged:

- 4V and 5 V switching power supplies ([g-SPS v1.02 LiPOL and DDRV](#)),
- i-hatGSM3G ([RASPBERRY PI adapter board for ITBPM shields](#)) and,
- j-328GSM3GLader ([Arduino Micro / Mini / Nano adapter board for ITBPM shields](#)).

Arduino C, Raspberry PI [USB drivers, Python and shell script] and BeagleBone Black [USB drivers, Python and shell script] software support.

**u-GSM shield v2.19** integrates in this format the following main features:

- Raspberry PI, Beagle Bone Black and ITBPM *embedded interfaces*,
- The u-GSM board can be trimmed by end user. Standard, the PCB perfectly fits perfectly with Beagle Bone Black. By trimming, the PCB will fit the Raspberry PI form factor, or the ITBPM format.
- USB is available via soldering PADS and via standard USB mini B.
- External SIM support via soldering PADS [also, u-GSM have nano-SIM holder as default].
- VIA pads for super-capacitor [or additional capacitor] soldering.
- Modem power separation circuit embedded [enables modem advanced sleep mode].
- Solder jumpers for alternate configuration.

Not forget to mention about oldies but goldies features [some of them coming from I-LTE, d-u3G, c-uGSM and h-nanoGSM designs] like:

- high performances GNSS engine embedded [only BG96, EG91A and EG95A versions] with parallel GPS and Glonass satellites interpolation for best accuracy and signal sensitivity. Supports active and passive GNSS antennas.
- ITBPM interface - digital/powering interface compliant itbrainpower.net modular modem interface
- 3-5V auto voltage support for UART and control GPIOs [ENABLE, RESET, STATUS and RI]
- embedded LiPo battery / Li-Ion battery / super-capacitor charger --> u-GSM can be powered directly from RPI / BBB 5V PINS!!!, from USB or external 5V 150mA power source
- supports direct powering from 4V, 650mA sustained and 2A pulse capable power supply [no battery, no super-capacitor required]
- RESET push switch integrated [modified function for BG96 variant]
- ITBPM, USB and external SIM interfaces have BIG SIZE SOLDERING PADS
- Compact design [main partition -wo RPI&BBB interfaces]: 27 x 45mm
- Slim weight: around 10g
- uFL or SMA F antenna connector [due to mechanical reasons, SMA F versions can be connected to RPI or BBB only via ITBPM interface]

Manufactured in EU.

## u-GSM LTE CAT-M1 + NB IoT + EGPRS GLOBAL + GNSS

Quectel BG96 module

LTE FDD: B1 / B2 / B3 / B4 / B5 / B8 / B12 / B13 / B18 / B19 / B20 / B26 / B28

LTE TDD: B39 [LTE CATM1 only]

EGPRS: 800/900/1800/1900 Mhz

GNSS: Galileo, GPS, GLONASS, BeiDou/Compass

PN: UGSM219-BG96#xxx

## u-GSM LTE NB IoT GLOBAL

Quectel BC95G module

LTE FDD: B1 / B2 / B3 / B4 / B5 / B8 / B12 / B13 / B18 / B19 / B20 / B26 / B28

LTE TDD: B39 [LTE CATM1 only]

EGPRS: 800/900/1800/1900 Mhz

PN: UGSM219-BG96#xxx

## u-GSM LTE CAT4 GLOBAL

Quectel EG95E module

LTE FDD: B1/B3/B7/B8/B20/B28A

WCDMA: B1/B8

GSM: 900/1800 Mhz

PN: UGSM219-EG95E#xxx

## u-GSM LTE CAT1 GLOBAL

Quectel EG91E module

LTE FDD: B1/B3/B7/B8/B20/B28A

WCDMA: B1/B8

GSM: 900/1800 Mhz

PN: UGSM219-EG91E#xxx

## u-GSM 3G GLOBAL

Quectel UG96 module

UMTS: 800/850/900/1900/2100 Mhz

GSM: 850/900/1800/1900 Mhz

PN: UGSM219-UG96#xxx

## u-GSM 3G EUROPEAN

Quectel UG95E module

UMTS: 900/2100 Mhz

GSM: 900/1800 Mhz

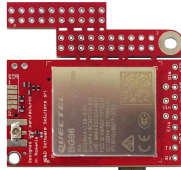


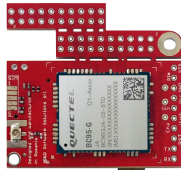

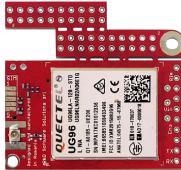
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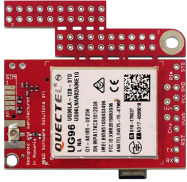
## u-GSM 2G/GSM GLOBAL

Quectel M95FA module

GSM: 850/900/1800/1900 Mhz

PN: UGSM219-M95FA#xxx

PN – category	Description	Image	Usage
UGSM219-BG96#UFL <i>Low Power LTE</i>	LTE CATM1 + NB IoT + EGPRS + GNSS - Quectel BG96 3GPP E-UTRA Release 13  Bands: FDD LTE - B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 TDD LTE - B39 [CAT M1 only] GSM - 850/900/1800/1900 MHz  Speeds: CAT M1 - up to Max 300Kbps (DL), Max. 375Kbps (UL) NB IoT - up to Max. 32Kbps (DL), Max. 70Kbps (UL) EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  GNSS: Galileo, GPS, GLONASS, BeiDou/Compass, QZSS  equipped with u.FL connector - GSM, u.FL connector - GNSS		Global
UGSM219-BG96#SMA <i>Low Power LTE</i>	Same as above, but with SMA F connector – GSM and u.FL connector - GNSS		Global
UGSM219-BC95G#UFL <i>Low Power LTE</i>	NB IoT only - Quectel BC95G  Bands: LTE - B1/B3/B8/B5/B20/B28**  Speeds: NB IoT Single Tone / Multi Tone** - Max. 25.2Kbps (DL), Max. 15.625 / 54 Kbps (UL)  equipped with u.FL connector - GSM		Global
UGSM219-BC95G#SMA <i>Low Power LTE</i>	Same as above, but with SMA F connector		Global
UGSM219-UG95E#UFL <i>LTE / 4G</i>	LTE / 4G LTE IoT/M2M-optimized CAT4 - Quectel EG95E 3GPP E-UTRA Release 11  Bands: FDD LTE - B1/B3/B7/B8/B20/B28A** WCDMA - B1/B5/B8 GSM - B1/B8  Speeds: LTE-FDD - up to Max 150Mbps (DL)/Max 50Mbps (UL) DC-HSDPA: - Max 42Mbps (DL); HSUPA: Max 5.76Mbps (UL); WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL) EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  equipped with u.FL connector		Europe*
UGSM219-UG95E#SMA <i>LTE / 4G</i>	Same as above, but with SMA F connector		Europe*
UGSM219-UG91E#UFL <i>LTE / 4G</i>	LTE / 4G LTE IoT/M2M-optimized CAT1 - Quectel EG91E 3GPP E-UTRA Release 11  Bands: FDD LTE - B1/B3/B7/B8/B20/B28A** WCDMA - B1/B5/B8 GSM - B1/B8  Speeds: LTE-FDD - up to Max 10Mbps (DL)/Max 10Mbps (UL) DC-HSDPA: - Max 42Mbps (DL); HSUPA: Max 5.76Mbps (UL); WCDMA: Max 384Kbps (DL)/Max 384Kbps (UL) EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  equipped with u.FL connector		Europe*
UGSM219-UG91E#SMA <i>LTE / 4G</i>	Same as above, but with SMA F connector		Europe*
UGSM219-UG96#UFL <i>3G + GSM GLOBAL</i>	3G [UMTS/HSPA]- Quectel UG96  UMTS - 800/850/900/1900/2100 Mhz GSM - 850/900/1800/1900 MHz  Speeds: HSUPA/HSPDA - Max 5.76Mbps / Max 7.2Mbps UMTS - Max. 384Kbps (DL), Max. 384Kbps EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  equipped with u.FL connector		Global
UGSM219-UG96#SMA <i>3G + GSM GLOBAL</i>	Same as above, but with SMA F connector		Global
UGSM219-UG95E#UFL <i>3G + GSM European</i>	3G [UMTS/HSPA]- Quectel UG95E  UMTS - 900/2100 Mhz GSM - 900/1800 MHz  Speeds: HSUPA/HSPDA - Max 5.76Mbps / Max 7.2Mbps UMTS - Max. 384Kbps (DL), Max. 384Kbps EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  equipped with u.FL connector		Europe*
UGSM219-UG95E#SMA <i>3G + GSM European</i>	Same as above, but with SMA F connector		Europe*

PN – category	Description	Image	Usage
UGSM219-M95FA#UFL <i>GSM/GPRS GLOBAL</i>	2G [GSM/GPRS/EDGE]- Quectel M95FA  GSM - 850/900/1800/1900 MHz  Speeds: EDGE/GPRS - up to Max. 296Kbps (DL), Max. 236.8Kbps (UL) / Max. 107Kbps (DL), Max. 85.6Kbps (UL)  equipped with u.FL connector		Global
UGSM219-M95FA#UFL <i>GSM/GPRS GLOBAL</i>	Same as above, but with SMA F connector		Global

Part number	Accessories description
ihatGSM3G101B	<b>Raspberry PI [Zero, B+, II, II, 3] HAT adapter board</b> - connect u-GSM shield, via ITBPMM interface, with Raspberry PI without wires [not using embedded Raspberry PI interface]
j328GSM3GLader102B	<b>Arduino Micro / Arduino Mini / Arduino Nano adapter board</b> - connect u-GSM shield, via ITBPMM interface, with Arduino Micro / Arduino Nano USB / ArduinoPro Mini (or other compatible boards) without wires
gSPS101#4V(DDRV)	<b>g-SPS 4V adapter board</b> external plug-able switching power supply, 5-19V input, 4V output, 650mA sustained and max 2A pulse. 20.3x34.29mm. Use in "without LiPol/stand-alone" u-GSM boards configuration.
gSPS101#5V(LiPOL)	g-SPS 5V adapter board external plug-able switching power supply, 6-19V input, 5V output, 650mA sustained and max 2A pulse. 20.3x34.29mm. Use in "with LiPol battery" u-GSM boards configuration, when main power supply voltage is bigger than 5V.
ITBP-EMB2-UFL#100	embedded GSM antenna, 850Mhz->2250Mhz, u.FL connector and 100mm cable
ITBP-UFL-SMAF#100	u.FL to SMA female panel 100mm pigtail
ITBP-UFL-SMAF#085	u.FL to SMA female panel 85mm pigtail
ITBP-GSM-ANT-SMA90D#001	mini GSM/UMTS antenna, 0-1db, rod type, SMA F, 90 degree, no cable
SCAP1F5V#001	super capacitor for itbrainpower modular modems - 1F, 5V, ESR 150 mOhm
ITBP-LiPOL-CON#TP01	Lithium Polymer battery connector

\* EUROPE and other countries having compatible frequency networks

\*\* under development

## FEATURES AT A GLANCE:

*Unique modem form factor that supports ALL existing GSM protocols [LTE CAT M1, NB IoT, LTE CAT 4, LTE CAT 1, 3G/UMTS and 2G/GSM], depending on embedded module variant.*

Being a master piece of design, u-GSM is the unique world-wide modem shield that can be directly plugged to Raspberry PI or to BeagleBone Black and covers all GSM standards:

- [Low Power LTE] CAT M1 + NB IoT + 2G + GNSS - having embedded Quectel BG96 module
- [Low Power LTE] NB IoT - having embedded Quectel BC95G module
- LTE CAT 4 + 3G/UMTS + GSM - having embedded Quectel EG95x module
- LTE CAT 1 + 3G/UMTS + GSM - having embedded Quectel EG91x module
- 3G/UMTS + GSM - having embedded Quectel UG96 or UG95x module
- 2G / GSM / GPRS / EDGE - having embedded Quectel M95FA module

Info about available versions and modem performances [bands, transfer speeds, protocols supported], please read previous table.

**Raspberry PI embedded interface:** Plug directly the u-GSM shield into Raspberry PI GPIO interface. Raspberry PI 3+, 3, II, B+, Zero and Zero W are supported.

**BeagleBone Black embedded interface:** Plug directly the u-GSM shield into BeagleBone Black P9 GPIO interface.

**u-GSM shield can be powered directly from RPI / BBB 5V PINS!!** - thanks to integrated LiPO / LiIoN battery charger.

**GNSS [GPS + GLONASS] engine:** High performances GNSS engine embedded having parallel GALILEO, GPS and Glonass satellites interpolation for best sensitivity and accuracy. GNSS service it is available only for u-GSM versions equipped with BG96, EG91A and EG95A.

**Embedded USB adapter** - with mini-USB type B socket and *USB soldering pads*. Raspberry PI and BeagleBone Black Linux [DEBIAN] and Windows drivers support.

**ITBPMM\* interface having 3-5V auto voltage support** for UART [TX, RX] and control GPIOs [ENA, RST, STS and RI]

- u-GSM may be wired directly (without the need for any level adapter board) with any 3/5V Arduino shield or any version of RASPBERRY PI, BEAGLEBONE, other SBC or any other 3V-5V microcontroller.
- available trough 0.1"(2.54mm) BIG SIZE soldering pads.

Multiple powering configurations - the u-GSM shield can run in configurations with or without Lithium Polymer battery, depending on chosen powering schema.

SIM support: 1 x NANO SIM/USIM socket + 1 x external SIM interface.

**Very compact and light weight:** 27 x 45mm [main partition -wo RPI&BBB interfaces] / around 10g.

Arduino, BeagleBone and RaspberryPI code examples support files: - 4G, LTE, 3G, UMTS, GSM, SMS, DTMF, TCP/UDP, HTTPS and HTTP over 4G/3G/GPRS\*, smart features like RAM DISK SYSTEM for FILE STORAGE and other.

RaspberryPI and BeagleBone PPP, TCPIP routing support (Debian distribution based) and modem control scripts.

\* ITBPMMI - itbrainpower.net modular modem interface - compatible with any of our modular modems [c-uGSM dual SIM shield, h-nanoGSM shield, d-u3G shield and l-LTE shield]

## INTERFACES, SWITCHES and CONNECTORS:

### ITBPMI INTERFACE

In the left edge of the top PCB side, bottom to top:

1. RX[TXD] - modem TX - output
2. TX[RXD] - modem RX - input
3. RST - MODEM RESET - input, active HIGH\*
4. ENA - ENABLE MODEM POWER - input, active HIGH\*\*
5. Vusb - POWER PIN - output +5V (USB +5V)
6. Vin - POWER PIN - input +5V for LiPol charger only
7. Vcc - POWER PIN - input/output +4V\*\*
8. GND - POWER and DIGITAL GROUND
9. RI - RING INDICATOR - output
10. STATUS - STATUS - output

\* min. 250msec. pulse [HIGH level] will RESET the modem, excepting BG96 variant. RST pin have alternate functionality, as POWER ON / POWER OFF / exit PSM mode, for BG96 variants.

\*\* HIGH level will enable modem power. All u-GSM variants, excepting BG96, will be waked [POWERED ON]  
\*\* LOW level disconnects the modem power. All u-GSM variants will shut-down.

\*&\*\* To wake BG96 variant, keep ENA pin to HIGH level and then apply 250ms HIGH level pulse to RST pin.

### Raspberry PI embedded interface

In the PCB top side left hand, from left to right:

RPI02 - Vin <--> RPI 5V\*

RPI04 - Vin <--> RPI 5V\*

RPI06 - GND <--> RPI GND

RPI08 - TX[RXD] <--> RPI SERIAL TX\*\*

RPI10 - RX[TXD] <--> RPI SERIAL RX\*\*

RPI12 - STS <--> RPI GPIO18

RPI16 - ENA <--> RPI GPIO23

RPI16 - RST <--> RPI GPIO24

\* Read about sjp7 functionality below.

\*\* Read about sjp5 and sjp6 functionality below.

### BeagleBone Black embedded interface

In the PCB top side right hand, from right to left:

P9.01 - GND <--> BBB GND

P9.02 - GND <--> BBB GND

P9.05 - Vin <--> VDD 5V\* \*\*\*

P9.06 - Vin <--> VDD 5V\* \*\*\*

P9.11 - RX[TXD] <--> GPIO\_30[UART4\_RXD]\*\*

P9.12 - RST <--> GPIO\_60

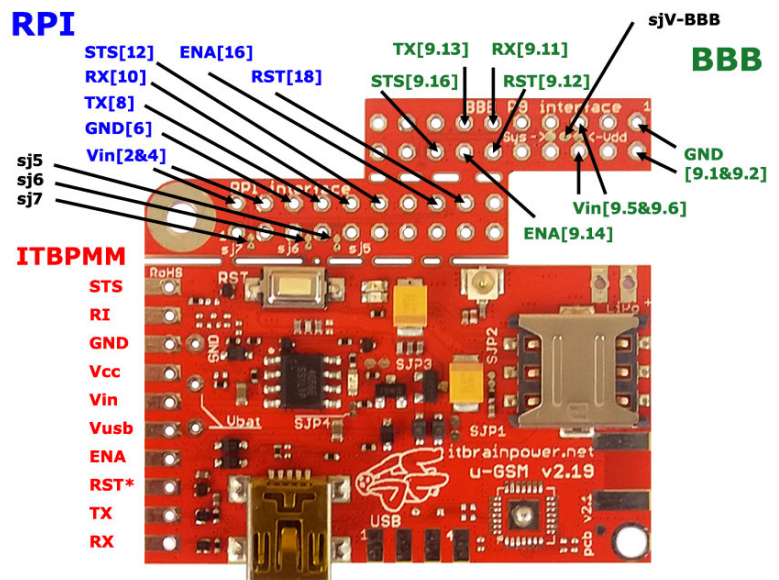
P9.13 - TX[RXD] <--> GPIO\_31[UART4\_TXD]\*\*

P9.15 - ENA <--> GPIO\_50

P9.16 - STS <--> GPIO\_51

\* Read about sjp7 functionality below.

\*\* Read about sjp5 and sjp6 functionality below.



### u-GSM shield signals description:

RX - TXD - to be wired to MCU RX pin  
TX - RXD - to be wired to MCU TX pin  
RST - RESET modem, active HIGH level \*\*  
ENA - Enable modem power, active HIGH level  
Vusb - 5V out, export USB 5V power  
Vin - 5V input for Lithium Polymer battery charger  
Vcc - 4V in/out, internally connected to LIPO + pad  
GND - Groud  
RI - Ring Indicator  
STS - STATUS indicator, HIGH level if the modem is ON  
\*\* alternate functionality [ON / OFF / exit PSM mode] for BG96 variants

### Solder jumpers description:

sjp5 - disconnect RX from RPI/BBB [default connected]\*\*\*  
sjp6 - disconnect TX from RPI/BBB [default connected]\*\*\*  
sjp7 - disconnect Vin from RPI/BBB 5V [default connected]  
\*\*\* read about u-GSM to BBB/RPI USB connection !!

RX/TX/RST/ENA/RI/STS signals are 3->5V auto level compliant

### Raspberry PI interface:

PIN 02 - 5V RPI - wired to Vin  
PIN 04 - 5V RPI - wired to Vin  
PIN 06 - GND - wired to GND  
PIN 08 - GPIO14[UART TX] - wired to TX  
PIN 10 - GPIO15[UART RX] - wired to RX  
PIN 12 - GPIO18 - wired to STS  
PIN 16 - GPIO23 - wired to ENA  
PIN 18 - GPIO24 - wired to RST

### Beagle Bone Black interface:

P9.01 - GND - wired to GND  
P9.02 - GND - wired to GND  
P9.05 - VDD 5V - wired to Vin  
P9.06 - VDD 5V - wired to Vin  
P9.11 - GPIO\_30[UART4\_RXD] - wired to RX  
P9.12 - GPIO\_60 - wired to RST  
P9.13 - GPIO\_31[UART4\_TXD] - wired to TX  
P9.14 - GPIO\_50 - wired to ENA  
P9.16 - GPIO\_51 - wired to STS

### BBB option pins:

\*P9.07 - SYS 5V - Vin [config via sjp-VBBB]  
\*P9.09 - SYS 5V - Vin [config via sjp-VBBB]

## u-GSM shield v 2.19 pinout

Image 1

<https://itbrainpower.net/images/u-GSM-top-03-parts.jpg>

## Solder jumpers

*sjp1\** - RESERVED - default circuit closed.

*sjp2* - Active GNSS antenna powering - default, the active GNDD antenna power is enabled [circuit closed].  
Relevant only for BG96 variant.

*sjp3* - disable LEDs powering - default, LEDs power is enabled [circuit closed]. STS [STATUS] signal is disabled if LEDs power is disabled.

*sjp4* - bypass modem power separation - default disabled [circuit open]. If enabled, ENA input will lose its role.

*sjp5* and *sjp6* - connect modem UART to RPI and BBB embedded interfaces - default connected [circuits closed]. If disconnect, RPI/BBB RX and TX GPIOs will be released. You may like to use this option if modem is connected to RPI/BBB via USB.

*sjp7\** - connect Vin to BBB/RPI 5V - default connected - u-GSM us as power supply 5V from RPI / BBB [circuit closed]. If disconnect, u-GSM may be powered independent.

*BBB voltage selector\** - use BBB Vdd 5V / SYS 5V as power source - default Vdd 5V is used as power source.  
Relevant if u-GSM is connected with BBB.

*sjp5*, *sjp6*, *sjp7* and BBB voltage selector are relevant only if u-GSM is connected to BBB/RPI via embedded interfaces.

\* consult u-GSM block schema >> [https://itbrainpower.net/downloadables/u-GSM\\_v2\\_19\\_block\\_schema\\_rev1\\_21.pdf](https://itbrainpower.net/downloadables/u-GSM_v2_19_block_schema_rev1_21.pdf)

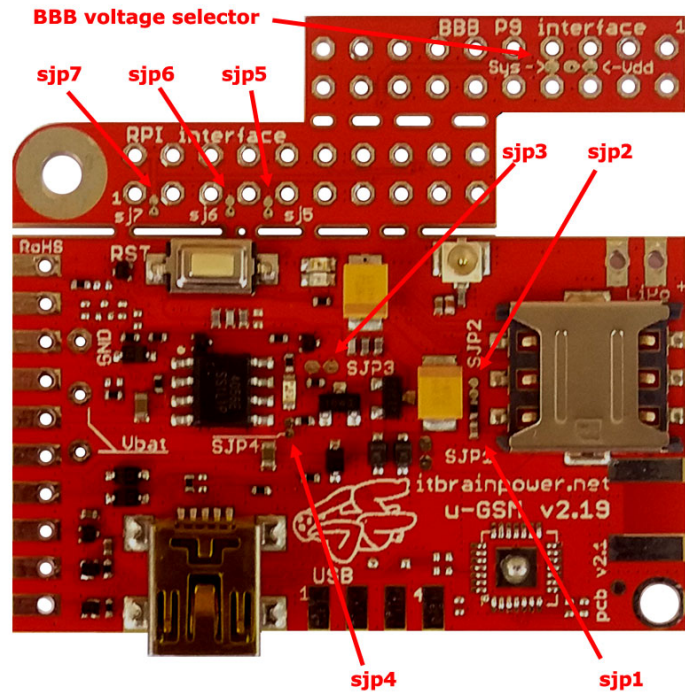


Image 2

<https://itbrainpower.net/images/u-GSM-top-03-solder-jumpers.jpg>

## External SIM CARD port, antenna connector

### External SIM card interface

1. SIM VDD
2. SIM DATA
3. SIM RESET
4. SIM GND
5. SIM CLOCK

- if not used, leave them not connected  
- if used, in order to avoid interferences, keep the wires as short as possible and take in to account the routing.

### GSM side antenna connector

u-GSM shield may be ordered with u.FL connector or with SMA F connector - see above the Part number table. Read about antenna wiring guidelines here:

<https://itbrainpower.net/a-gsm/u-GSM-Raspberry-Pi-antenna-notes>

### PCB breaking lines

If required, the u-GSM PCB may be trimmed across the breaking lines. We recommend to you to trim the u-GSM PCB only if you intend to fit your Raspberry PI & u-GSM shield assembly into one RPI case.

Guidelines here: <https://itbrainpower.net/a-gsm/u-GSM-Raspberry-PI-BeagleBone-Black-howto#trim>

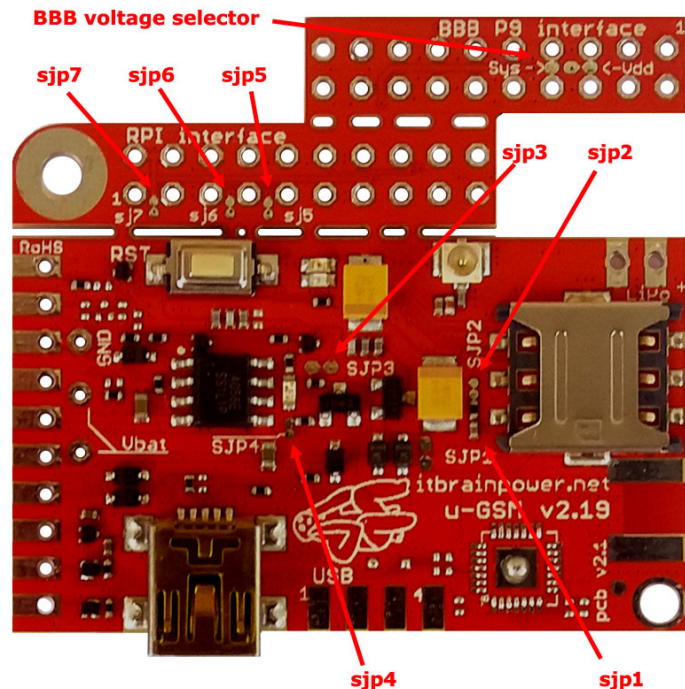


Image 3

<https://itbrainpower.net/images/u-GSM-bottom-01-interfaces.jpg>

## Arduino / Raspberry PI logical interfacing [using ITBPMM interface]

u-GSM shield PIN NAME	UNO / MINI / NANO / (Mega328)	MEGA2560 via software serial	DUE / MEGA2560 via hardware serial	Raspberry PI B+, Raspberry PI II, Raspberry PI 3, Pi3+
1. RX(TXD)	D2 (RX soft)	D10 (RX soft)	D19(RX1)	PIN10 (RX) *
2. TX(RXD)	D3 (TX soft)	D3 (TX soft)	D18(TX1)	PIN08 (TX) *
3. RST	D6	D6	D6	PIN18
4. ENA	D7	D7	D7	PIN16
6. Vin (5V LiPol)**	+5V	+5V	+5V	PIN02 or 04
8. GND	GND	GND	GND	PIN04 or 14
10. STS	D5	D5	D5	PIN 12

\* Raspberry PI: do not wire 1 and 2 (serial TX and RX) if USB communication is used!

\*\* WITH Lithium Polymer batteries configuration: wire 6 (Vin) OR do not wire it and use via USB powering placing a jumper between PIN5 (Vusb) and PIN6 (Vin). Read notes about u-GSM powering configuration on:

- u-GSM v2.19 shield block schema - [https://itbrainpower.net/downloadables/u-GSM\\_v2\\_19\\_block\\_schema\\_rev1\\_21.pdf](https://itbrainpower.net/downloadables/u-GSM_v2_19_block_schema_rev1_21.pdf)
- ITBP modular modem shields how to start - [https://itbrainpower.net/a-gsm/c-uGSM\\_d-u3G\\_how\\_to\\_start\\_tutorial](https://itbrainpower.net/a-gsm/c-uGSM_d-u3G_how_to_start_tutorial)
- gSPS adapter board - <https://itbrainpower.net/3G-GSM-shield-switching-power-supply/features>

**Raspberry PI interfacing schema using ITBPMM interface:** <https://itbrainpower.net/images/RPI-logical-wiring-u-GSM.png>

**Raspberry PI interfacing using i-HAT adapter how to:** [https://itbrainpower.net/a-gsm/i-hatGSM3G\\_d-u3G\\_c-uGSM\\_shield\\_howto\\_start\\_tutorial](https://itbrainpower.net/a-gsm/i-hatGSM3G_d-u3G_c-uGSM_shield_howto_start_tutorial)

### Arduino Zero or xyz-mIoT modem-less shield interfacing:

1. RX(TXD)	←---→	RX0
2. TX(RXD)	←---→	TX1
3. RST	←---→	D6
4. ENA	←---→	D7
6. Vin	←---→	5V power supply
8. GND	←---→	GND
10. STS	←---→	D5

## Raspberry PI logical interfacing [using RPI embedded interface]

Apply the directives described in: [u-GSM SHIELD RASPBERRY PI HARDWARE HOWTO](#).

### HINTS:

- due to mechanical reasons, this variant cannot be used for u-GSM shield with SMA integration.
- we recommend to you to trim the u-GSM PCB only if you intend to fit your Raspberry PI & u-GSM shield assembly into one RPI case.



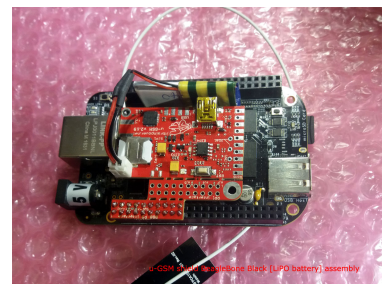
## BeagleBone Black logical interfacing

### Variant a. **Interfacing using BeagleBone Black P9 embedded interface.**

Apply the directives described in: [u-GSM SHIELD BEAGLEBONE BLACK HARDWARE HOWTO](#).

### Variant b. **Interfacing using ITBPMM interface.**

Apply the directives described in: [BeagleBone Black and ITBP modular modem interfacing how to](#).



## **CODE EXAMPLES and UTILITIES**

**Arduino code [C]:** kickstart for Arduino [interactive application], IoT REST [transparent socket] support class and NB IOT [UDP mode] support class.

**Raspberry PI and BeagleBone [PYTHON and shell script]\*:** PYTHON examples, UTILITIES [PPP and modem control] and DEBIAN image patched for ITBP modems.

\* Linux Debian based

<http://itbrainpower.net/downloads#u-GSM>

Resources marked with "#", requires for download the following information: your name, email address and the modem IMEI. The modem IMEI can be found printed on the Quectel GSM module, or run AT+GMGS command.

## **DOCUMENTATION, DRIVERS, DATASHEETS and additional info**

[https://itbrainpower.net/downloads#u-GSM\\_documentation](https://itbrainpower.net/downloads#u-GSM_documentation)

<https://itbrainpower.net/FAQ/>

## **HOW TO and PROJECTS**

<https://itbrainpower.net/projects>

## **WHERE TO BUY**

<https://itbrainpower.net/distributors>