Technical Information

MOTOROLA

Motorola G30 Developer's Guide
Developer's Kit

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Preface

Manual Scope

The G30 Developer's Kit is designed to support the hardware and software development and validation of the G30/G30 Adapter Quad Band GSM module.

This is done by routing the G30 81 pins to the "24" family 70 pin connector interface, to provide quick interface with the "24" family Evaluation Board.

This manual describes the use of G30 Adapter Board or the G30 itself (70 pin interface connector model) with the G30 Developer's Kit, and describes the technical details required by the user to successfully integrate the Motorola G30 cellular engine into an original equipment manufacturer (OEM) wireless host device. With the help of this manual, the user can utilize the Developer's Kit to conduct a full series of test and evaluation procedures on the G30, as well as perform application development.

Target Audience

This manual is intended for all members of the integration team who are responsible for integrating the G30 into the host application, including representatives from hardware, software and RF engineering disciplines.

Manual Organization

This manual contains the following chapters:

- **Chapter 1**—introduces the G30 Developer's Kit
- **Chapter 2**—describes the Developer Board and its components in detail, including connectors, jumpers, switches and LED indicators. It also includes a set of setup procedures for first-time use
- **Chapter 3**—provides contact information for Motorola Service Support and Customer Assistance

Applicable Documents

- G30 Module Hardware Description: 6802986C55-A
- G30 AT Commands: 6802986C33-A

Developer Board Safety

Precautions

Most Developer Board circuits are not shielded. Be sure to take appropriate precautionary measures in order to avoid ESD while handling the kit. ESD can damage the Developer Board and/or the G30 module attached to it, using the G30 Adapter Board.

User Operation

Do not operate your unit when a person is within eight inches (20 centimeters) of the antenna. A person or object within eight inches (20 centimeters) of the antenna could impair call quality and may cause the unit to operate at a higher power level than necessary, as well as expose that person to RF energy in excess of that established by the FCC RF Exposure Guidelines.

Important: The unit must be installed in a manner that provides a minimum separation distance of eight inches (20 centimeters) or more between the antenna and persons and must not be co-located or operate in conjunction with any other antenna or transmitter in order to satisfy FCC RF exposure requirements for mobile transmitting devices.

Important: To comply with the FCC RF exposure limits and to satisfy the categorical exclusion requirements for mobile transmitters, the requirements described in the following section, "Antenna Installation", must be met.

Antenna Installation

- A minimum separation distance of eight inches (20 centimeters) must be maintained between the antenna and all persons.
- The combined cable loss and antenna gain must not exceed +7.5 dBi (850 band). The combined cable loss and antenna gain must not exceed +2.5 dBi and total system output must not exceed 2.0W EIRP in the PCS (1900) band in order to comply with the EIRP limit of 24.232 (b). OEM installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance.

Contact Us

We at Motorola want to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

For general contact, technical support, report documentation errors and to order manuals, use this email address:
M2M.CustomerCare@motorola.com

Motorola appreciates feedback from the users of our information.

Text Conventions

The following special paragraphs are used in this guide to point out information that must be read. This information may be set-off from the surrounding text, but is always preceded by a bold title in capital letters:

Note

Note: Presents additional, helpful, noncritical information that you can use.

Warning

Warning: Presents information to warn you of a potentially hazardous situation in which there is a possibility of personal injury.

Important

Important: Presents information to help you avoid an undesirable situation or provides additional information to help you understand a topic or concept.

Caution

Caution: Presents information to identify a situation in which damage to software, stored data, or equipment could occur, thus avoiding the damage.

Field Service

For Field Service requests, use this email address:
M2M.CustomerCare@motorola.com

General Safety

Remember!. . . safety depends on you!

The following general safety precautions must be observed during all phases of operation, service, and repair of the equipment described in this manual. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. Motorola, Inc. assumes no liability for the customer's failure to comply with these requirements. The safety precautions listed below represent warnings of certain dangers of which we are aware. You, as the user of this product,

should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

Ground the instrument

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical ground. If the equipment is supplied with a three-conductor AC power cable, the power cable must be either plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter. The three-contact to two-contact adapter must have the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable must meet International Electrotechnical Commission (IEC) safety standards.

> **Note:** Refer to *"Grounding Guideline for Cellular Radio Installations"* –Motorola part no. *68P081150E62*.

Do not operate in an explosive atmosphere

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Do not service or adjust alone

Do not attempt internal service or adjustment unless another person, capable of rendering first aid is present.

Keep away from live circuits

Operating personnel must:

- not remove equipment covers. Only Factory Authorized Service Personnel or other qualified maintenance personnel may remove equipment covers for internal subassembly, or component replacement, or any internal adjustment
- not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed
- always disconnect power and discharge circuits before touching them

Do not substitute parts or modify equipment

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of equipment. Contact Motorola Warranty and Repair for service and repair to ensure that safety features are maintained.

Dangerous procedure warnings

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all

other safety precautions that you deem necessary for the operation of the equipment in your operating environment.

Warning example:

Warning: Dangerous voltages, capable of causing death, are present in this equipment. Use extreme caution when handling, testing, and adjusting.

Caring for the Environment

The following information is provided to enable regulatory compliance with the European Union (EU) Directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE) when using Motorola equipment in EU countries.

Disposal of Motorola equipment in EU countries

Please do not dispose of Motorola equipment in landfill sites.

In the EU, Motorola in conjunction with a recycling partner will ensure that equipment is collected and recycled according to the requirements of EU environmental law.

Please contact the Customer Network Resolution Center (CNRC) for assistance. The 24 hour telephone numbers are listed at
http://mynetworksupport.motorola.com
Select **Customer Network Resolution Center contact information**.

Alternatively if you do not have access to CNRC or the internet, contact the Local Motorola Office.

Disposal of Motorola equipment in non-EU countries

In non-EU countries, dispose of Motorola equipment in accordance with national and regional regulations.

Turkey

Article 7 of the *European Union (EU) Directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE)*

The Government of Turkey requests a statement of conformity with the EEE regulation be provided with this equipment. This statement of EEE conformity (in Turkish) is: **EEE Yönetmeliğine Uygundur**.

Limitation of Liability

The Products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body; in other applications intended to support or sustain life; for the planning, construction, maintenance, operation or use of any nuclear facility; for the flight, navigation, communication of aircraft or ground support equipment; or in any other application in which the failure of the Product could create a situation where personal injury or death may occur. If CUSTOMER should use any Product or provide any Product to a third party for any such use, CUSTOMER hereby agrees that MOTOROLA is not liable, in whole or in part, for any claims or damages arising from such use, and further agrees to indemnify and hold MOTOROLA harmless from any claim, loss, cost or damage arising from such use.

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The preceding states MOTOROLA's entire liability for MOTOROLA's breach or failure to perform under any provision of this Agreement.

Warranty Notification

Motorola guarantees to you, the original purchaser, the OEM Module and accessories which you have purchased from an authorized Motorola dealer (the "Products"), to be in conformance with the applicable Motorola specifications current at the time of manufacture for a term of fifteen (15) months from Product manufacture date (Warranty Term).

You must inform Motorola of the lack of conformity to the applicable specifications of any of the Products within a period of two (2) months from the date on which you detect a defect in material, workmanship or lack of conformity and in any event within a term not to exceed the Warranty Term, and must immediately submit the Product for service to Motorola's Authorized Repair or Service Center. Motorola shall not be bound by Product related statements not directly made by Motorola nor any warranty obligations applicable to the seller.

A list of the Motorola Call Center numbers is enclosed with this Product.

During the Warranty term, Motorola will, at its discretion and without extra charge, as your exclusive remedy, repair or replace your Product which does not comply with this warranty; or failing this, to reimburse the price of the Product but reduced to take into account the use you have had of the Product since it was delivered. This warranty will expire at the end of the Warranty Term.

This is the complete and exclusive warranty for a Motorola OEM Module and accessories and in lieu of all other warranties, terms and conditions, whether express or implied.

Where you purchase the product other than as a consumer, Motorola disclaims all other warranties, terms and conditions express or implied, such as fitness for purpose and satisfactory quality.

In no event shall Motorola be liable for damages nor loss of data in excess of the purchase price nor for any incidental special or consequential damages* arising out of the use or inability to use the Product, to the full extent such may be disclaimed by law.

This Warranty does not affect any statutory rights that you may have if you are a consumer, such as a warranty of satisfactory quality and fit for the purpose for which products of the same type are normally used under normal use and service, nor any rights against the seller of the Products arising from your purchase and sales contract.

(*)including without limitation loss of use, loss of time, loss of data, inconvenience, commercial loss, lost profits or savings.

How to Get Warranty Service?

In most cases the authorized Motorola dealer which sold and/or installed your Motorola OEM Module and original accessories will honor a warranty claim and/or provide warranty service. Alternatively, for further information on how to get warranty service please contact either the customer service department of your service provider or Motorola's service centers, listed in Chapter 3.

Claiming

In order to claim the warranty service you must return the OEM Module and/or accessories in question to Motorola's Authorized Repair or Service Center in the original configuration and packaging as supplied by Motorola. Please avoid leaving any supplementary items like SIM cards. The Product should also be accompanied by a label with your name, address, and telephone number; name of operator and a description of the problem.

In order to be eligible to receive warranty service, you must present your receipt of purchase or a comparable substitute proof of purchase bearing the date of purchase. The phone should also clearly display the original compatible electronic serial number (IMEI) and mechanic serial number [MSN]. Such information is contained with the Product.

You must ensure that all and any repairs or servicing is handled at all times by a Motorola Authorized Service Center in accordance with the Motorola Service requirements

In some cases, you may be requested to provide additional information concerning the maintenance of the Products by Motorola Authorized Service Centers only, therefore it is important to keep a record of any previous repairs, and make them available if questions arise concerning maintenance

Conditions

This warranty will not apply if the type or serial numbers on the Product has been altered, deleted, duplicated, removed, or made illegible. Motorola reserves the right to refuse free-of-charge warranty service if the requested documentation can not be presented or if the information is incomplete, illegible or incompatible with the factory records.

Repair, at Motorola's option, may include reflashing of software, the replacement of parts or boards with functionally equivalent, reconditioned or new parts or boards. Replaced parts, accessories, batteries, or boards are warranted for the balance of the original warranty time period. The Warranty Term will not be extended. All original accessories, batteries, parts, and OEM Module equipment that have been replaced shall become the property of Motorola. Motorola does not warrant the installation, maintenance or service of the products, accessories, batteries or parts.

Motorola will not be responsible in any way for problems or damage caused by any ancillary equipment not furnished by Motorola which is attached to or used in connection with the Products, or for operation of Motorola equipment with any ancillary equipment and all such equipment is expressly excluded from this warranty.

When the Product is used in conjunction with ancillary or peripheral equipment not supplied by Motorola, Motorola does not warrant the operation of the Product/peripheral combination and Motorola will not honor any warranty claim where the Product is used in such a combination and it is determined by Motorola that there is no fault with the Product. Motorola specifically disclaims any responsibility for any damage, whether or not to Motorola equipment, caused in any way by the use of the OEM Module, accessories, software applications and peripherals (specific examples include, but are not limited to: batteries, chargers, adapters, and power supplies) when such accessories, software applications and peripherals are not manufactured and supplied by Motorola.

What is Not Covered by the Warranty

This warranty is not valid if the defects are due to damage, misuse, tampering, neglect or lack of care and in case of alterations or repair carried out by unauthorized persons.

The following are examples of defects or damage not covered by this product warranty

1. Defects or damage resulting from use of the Product in other than its normal and customary manner.

2. Defects or damage from misuse, access to incompatible sources, accident or neglect.

3. Defects or damage from improper testing, operation, maintenance, installation, adjustment, unauthorized software applications or any alteration or modification of any kind.

4. Breakage or damage to antennas unless caused directly by defects in material or workmanship.

5. Products disassembled or repaired other than by Motorola in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.

6. Defects or damage due to range, coverage, availability, grade of service, or operation of the cellular system by the cellular operator.

7. Defects or damage due to moist, liquid or spills of food.

8. Control unit coil cords in the Product that are stretched or have the modular tab broken.

9. All plastic surfaces and all other externally exposed parts that are scratched or damaged due to customer normal use.

Depending on operating conditions and your usage habits, wear and tear might take place of components including mechanical problems related to Product housing, paint, assembly, sub-assemblies, displays and keyboards and any accessories which are not part of the Product's in-box configuration. The rectification of faults generated through wear and tear and the use of consumable items like batteries beyond their Optimum Performance Time as indicated in the product manual is considered to be your responsibility and therefore Motorola will not provide the free Warranty repair service for these items

Installed Data

Please make and retain a note of all data you have inserted into your Product for example names, addresses, phone numbers, user and access codes, notes etc. before submitting your Product for a Warranty service as such data may be deleted or erased as part of the repair or service process.

Please note if you have downloaded material onto your Product, these may be deleted or erased as part of the repair process or testing process. Motorola shall not be responsible for such matters. The repair or testing process should not affect any such material that was installed by Motorola on your Product as a standard feature.

Out of Warranty Repairs

If you request Motorola to repair your Product any time after the Warranty term or where this warranty does not apply due to the nature of the defect or fault, then Motorola may in its discretion carry out such repairs subject to you paying Motorola its fees for such a repair or it may refer you to an authorized third party to carry out such repairs.

Revision History

Manual Number

6802986C48

Manual Title

G30 Developer's Kit

Version Information

The following table lists the manual version, date of version, and remarks about the version required.

Revision History

Version	Date Issue	Remarks
A	December 15, 2009	Initial Release

Chapter 1: Introduction

General Description

The G30 Developer's Kit is intended for evaluating the G30 module, as well as for developing and testing software applications for it.

The main component of the G30 Developer's Kit is the Developer Board, which is mounted in a chassis. The kit includes a cover for the Developer Board. The cover has openings on the top and sides to accommodate the Developer Board's external connectors.

Figure 1-1 shows the Developer's Kit top view with cover; Figure 1-2 shows the front view; Figure 1-3 shows the left side view; Figure 1-4 shows the rear view; Figure 1-5 shows the right side view.

Figure 1-1: G30 Developer's Kit—Top View with Cover

G30 Power
Indicator

SIM Tray

G30 On/Off
Pushbutton
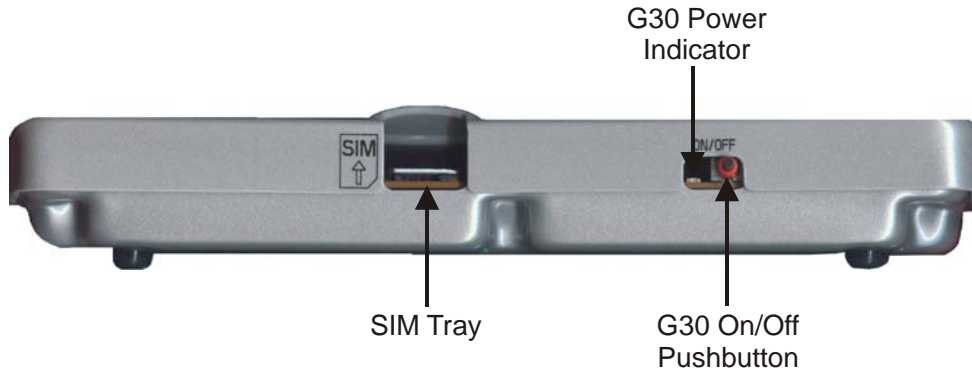
Figure 1-2: G30 Developer's Kit—Front View with Cover

SPEAKER MIC HEADSET ALERT

NA For
G30

Headset
Connector

Microphone
Connector

Speaker
Connector
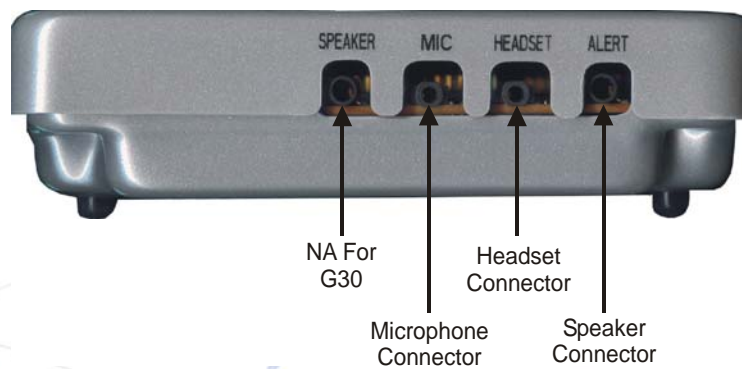
Figure 1-3: G30 Developer's Kit—Left Side View with Cover

For Development
Use Only

Power
Indicator LED

POWER ON USB

Wall-mount
Adapter Connector

Power
On/Off Switch

NA For
G30

RS232-1
Connector

RS232-2
Connector

NA For
G30
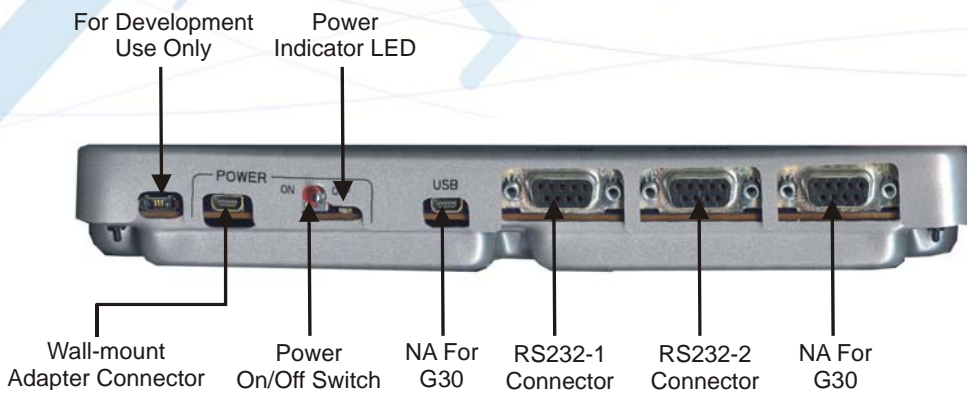
Figure 1-4: G30 Developer's Kit—Rear View with Cover

EXT.
ANT.

INT.
ANT.

External
Antenna Input

Internal
Antenna Input
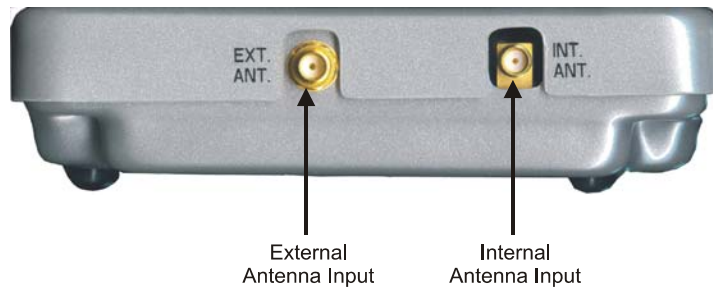
Figure 1-5: G30 Developer's Kit—Right Side View with Cover

Package Contents

The G30 Developer's Kit includes the Developer Board, chassis, cover and standard accessories, which enable you to better utilize the board. The kit and its components are described in Table 1-1.

Table 1-1: G30 Developer's Kit Package Contents

Description	Part No.	Quantity
Antenna Stub	8588912N02	1
Developer Board	FCN5540C	1
Developer Board Top Cover	1588522V58	1
Developer Board Bottom Cover	1588522V59	1
Documentation CD	FVN5423A	1
European Plug for Adapter	SYN7456A	1
M2/6mm Screw (for G30 fastening)	0387839V09	2
Mono Headset	SYN8390B	1
RF cable between internal antenna and external connectors	3087568V01	1
RF cable with MMCX connector between G30 and external antenna connector	3087568V02	1
RF cable with U.FL connector between G30 and external antenna connector	3087568V99	1
RS232 Cable	3086159U69	1
Test SIM Card	8102316T02	1
Mini-AB USB Cable (not used with G30)	SKN6371B	1
Wall Mount Power Adapter	SPN5202A	1

Figure 1-6 shows the G30 Developer's Kit, including the Developer Board (without cover), the G30 Adapter and some accessories.

Figure 1-7 shows the G30 Developer's Kit, including the Developer Board (without cover), the G30 and some accessories.

Important: The Developer's Kit does not include a G30/G30 Adapter device. The G30/G30 Adapter must be obtained separately.
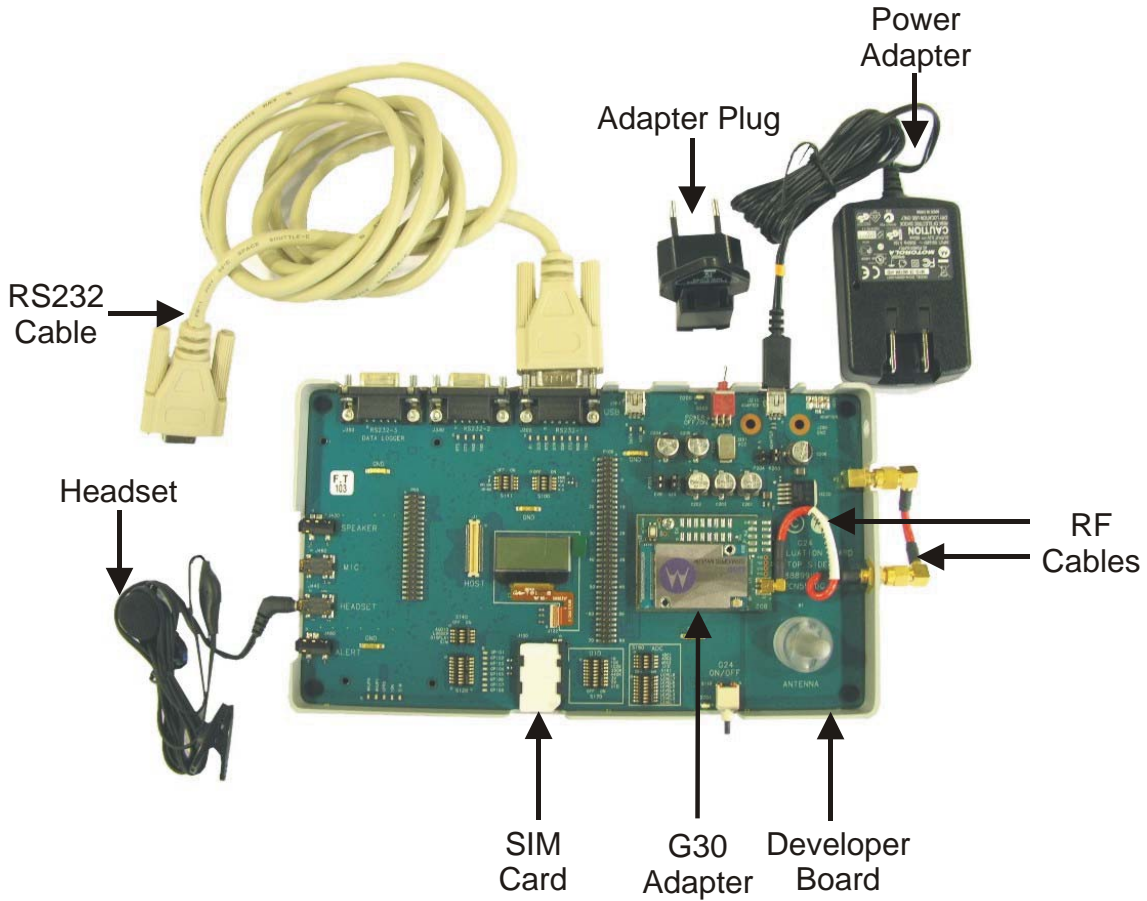
Figure 1-6: G30 Developer's Kit with Board, G30 Adapter and Accessories
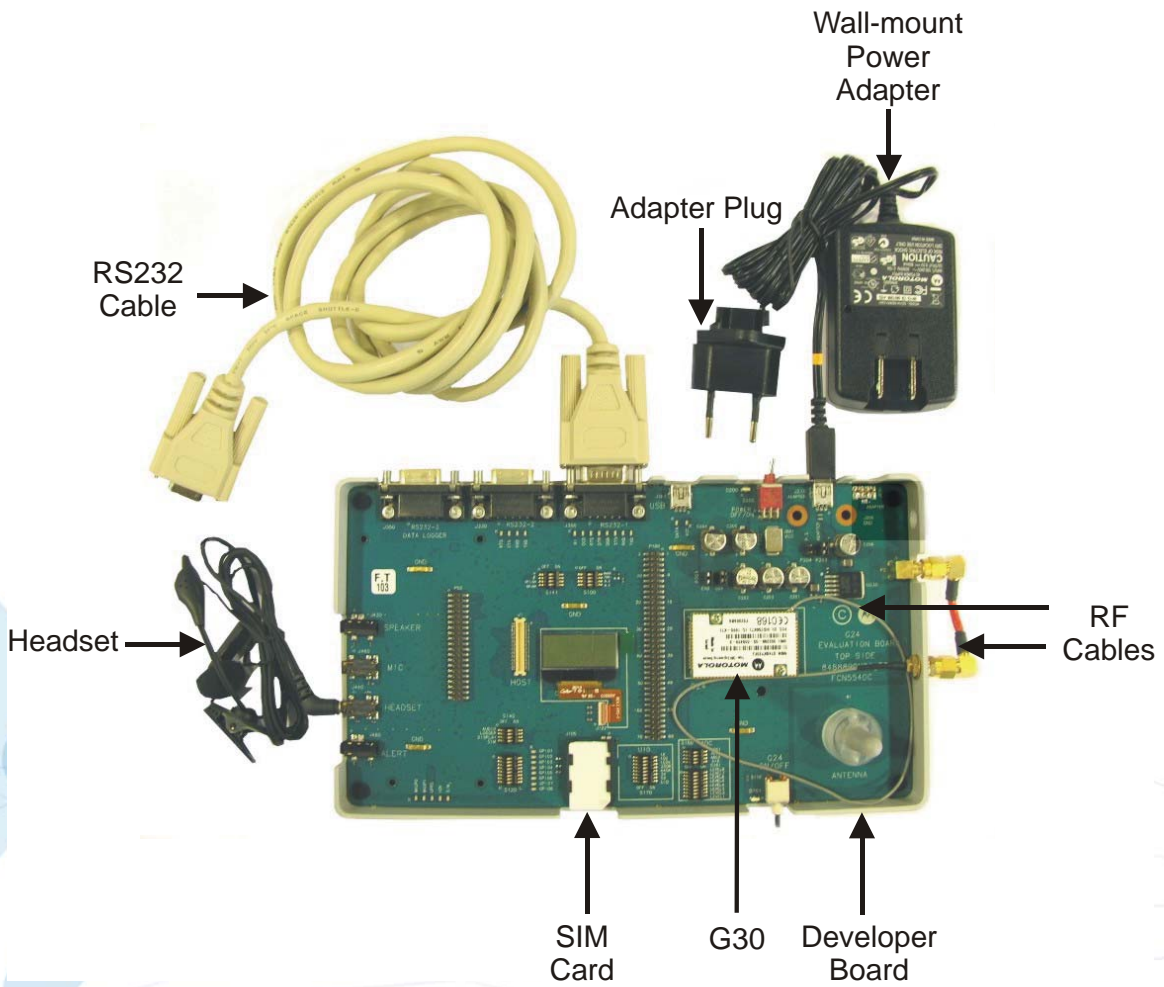
Figure 1-7: G30 Developer's Kit with Board, G30 and Accessories

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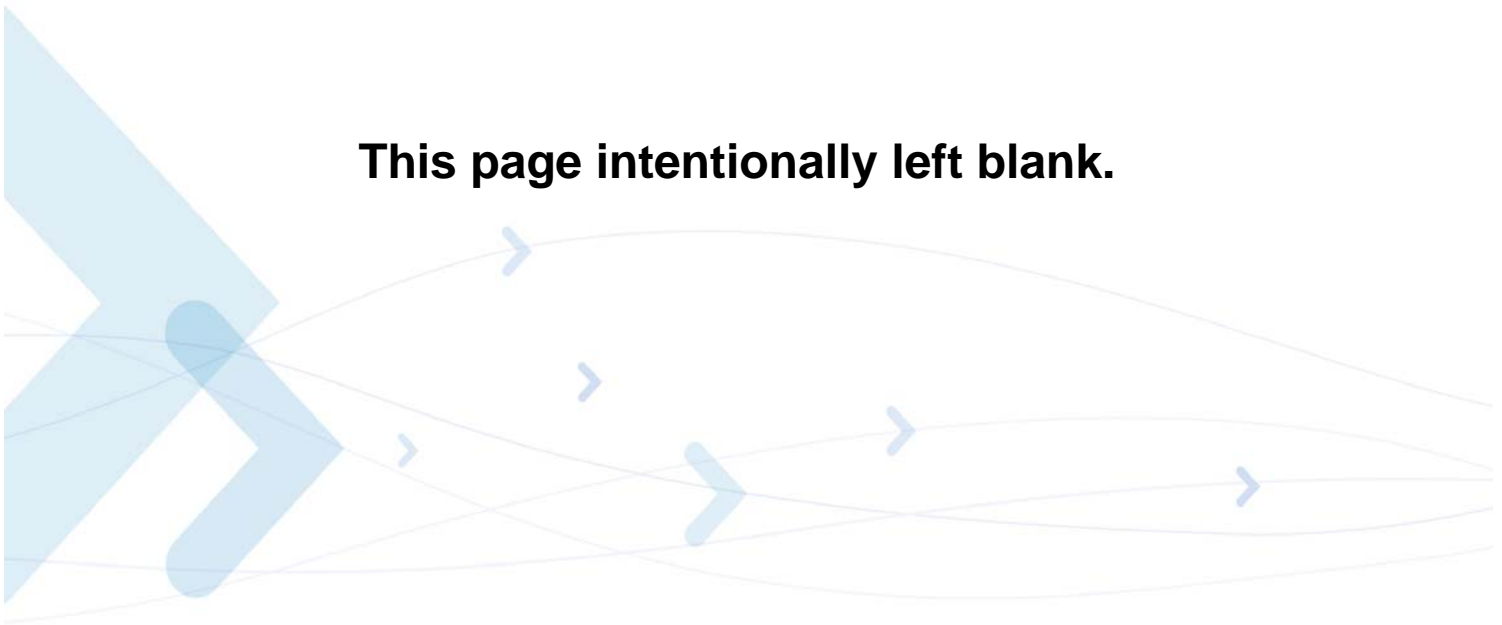
Chapter 2: Developer Board and Interfaces Description

This chapter contains the following sections:

- **Overview**—provides an overview of the Developer Board
- **Initial Setup**—describes how to set up and prepare the Developer Board for first-time use
- **Configuration**—describes how to modify the default settings to control the operation of the Developer Board
- **Components and Specifications**—lists each connector, switch, jumper, option switch. and LED. Also provides other details and specifications for the Developer Board

Overview

The G30 Developer Board is designed to support the hardware and software development and validation of the G30 GSM/GPRS/EGPRS data module. The Developer Board provides a peripheral platform to operate the G30 as a standalone product, and to easily access the G30 70-pin interface connector signals.

Developer Board Features and Structure

The Developer Board provides these features to facilitate software and hardware development:

- Easy access to G30 70-pin interface connector signals, through a large header connector and an external host connector
- Wall adapter and DC power supplies for board operation
- LED indicators for critical signals
- RS232 serial interfaces
- Analog audio interface for speaker, alert speaker, microphone and headset
- SIM card interface
- Switches and jumpers for controlling board operation

Figure 2-1 shows the Developer Board structure:
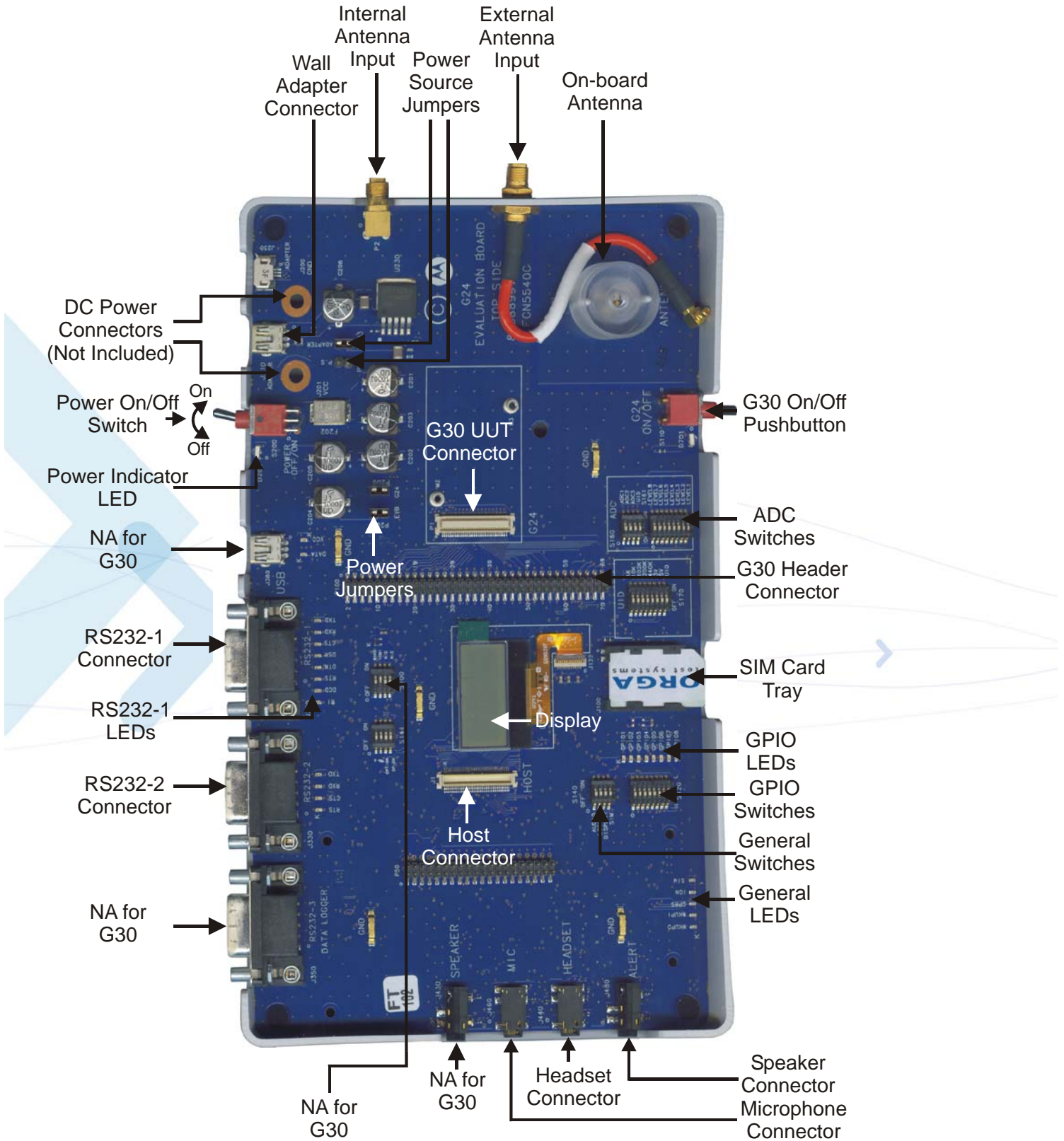
Figure 2-1: Developer Board Structure

Initial Setup

This section describes the initial procedure for setting up the Developer Board for G30 testing and evaluation. The tasks in this section need to be performed only once, prior to initial use of the Developer's Kit. After performing the initial setup, you can modify the default settings or use different peripheral devices, as described in "Configuration" on page 16.

Perform the steps in this section in sequence.

Before starting, remove the cover of the Developer Board. The cover simply slides up off the board, and does not require the removal of any screws or clips. After setting up the Developer Board, replace the cover simply by pushing it gently back into place. Make sure the cover is aligned properly with the external connectors on the side of the board.

Note: Numbers that appear in parentheses throughout the following paragraphs (Jxxx, Sxxx, etc.), refer to components reference designation numbers as they are given on the developer board and in the schematic diagrams.

Connecting the G30 Adapter

To Connect the G30 Adapter to the Developer Board

1. Place the G30 adapter (Figure 2-2) on the Developer Board area, marked by a white rectangle, and push the G30 adapter 70-pin connector down into the G30 70-pin connector on the Developer Board.

   The screw hole on the G30 adapter should be aligned with the G30 spacer (denoted by M2).

2. Fasten the G30 adapter to the Developer Board using one M2 screw provided with the kit.

3. Connect the internal RF cable MMCX connector to the MMCX connector of the G30 adapter by pushing it in until it clicks (Figure 2-2).

4. Insert the External Antenna Connector into the dedicated hole in the Developer Board cover and close nut.

5. Connect the external RF cable between the External Antenna Connector and the Internal Antenna Connector (Figure 2-2).

   This connects the G30 adapter to the antenna.

Figure labels:
- G30 Adapter
- Internal Antenna Connector
- External RF Cable
- G30 Adapter Screw
- MMCX Connector
- Internal RF Cable
- External Antenna Connector
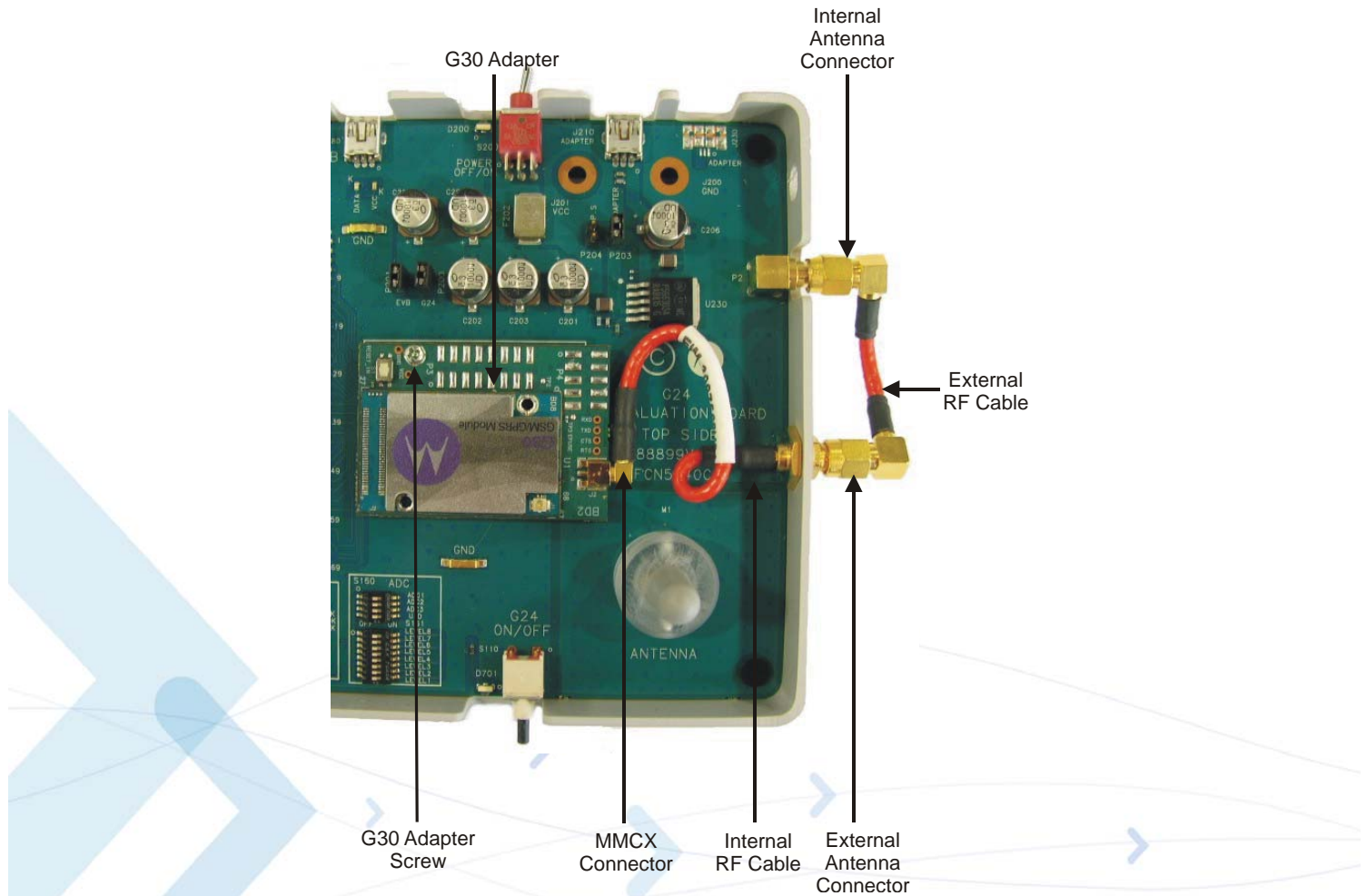
Figure 2-2: Connecting the G30 Adapter

Connecting the G30

To Connect the G30 to the Developer Board

1. Connect the internal RF cable U.FL connector to the U.FL connector of the G30 by pushing it until it clicks (Figure 2-3).

2. Place the G30 (Figure 2-4) on the Developer Board area, marked by a white rectangle, and push the G30 70-pin connector down into the G30 70-pin connector on the Developer Board.

   The two screw holes on the G30 should be aligned with the G30 spacers (denoted by M2 and M3).

3. Fasten the G30 to the Developer Board using the two M2 screws provided with the kit.

4. Insert the External Antenna Connector into the dedicated hole in the Developer Board cover and close nut.

5. Connect the external RF cable between the External Antenna Connector and the Internal Antenna Connector (Figure 2-4).

   This connects the G30 to the antenna.
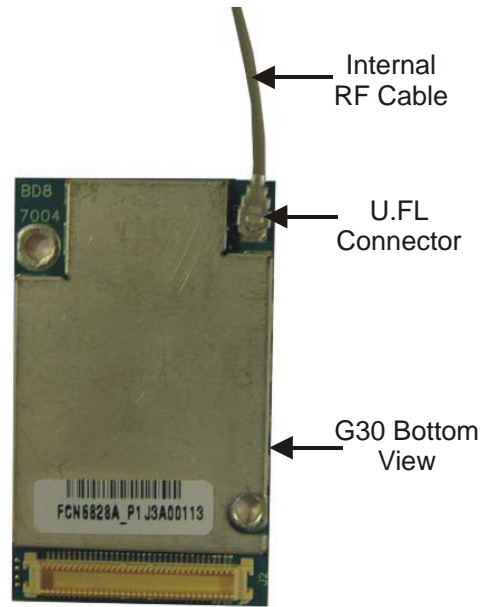
Figure 2-3: Connecting the U.FL Connector to the G30
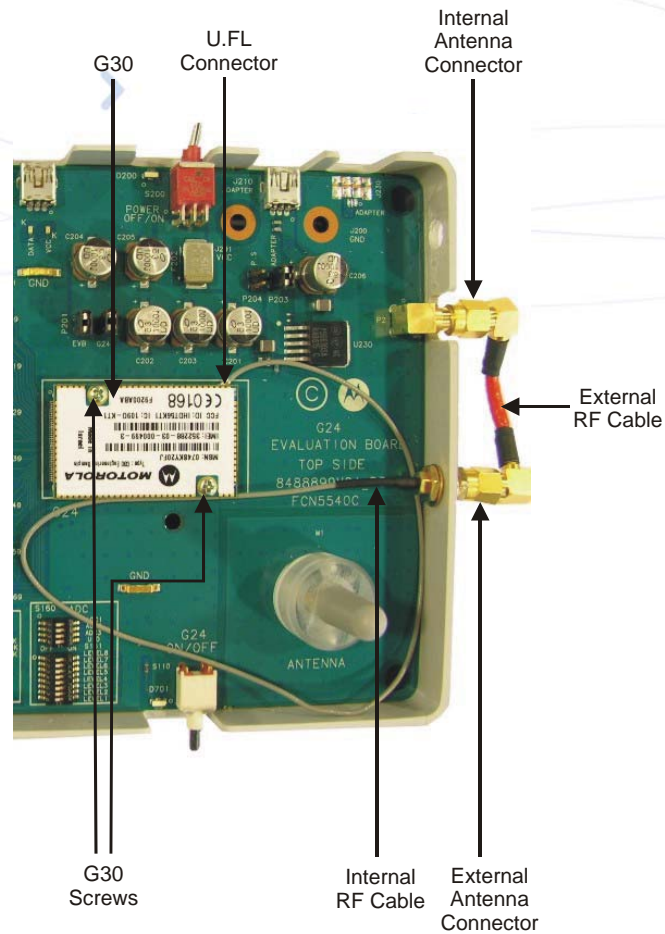
Figure 2-4: Connecting the G30

Connecting External Accessories

Replace the Developer Board cover and connect the following external connectors in the sequence shown.

Power Supply

Caution: Before connecting the power supply, make sure that the Developer Board On/Off switch (located in the rear of the board, as shown in Figure 2-5) is in the **OFF** position.

Caution: When using the Wall adapter, make sure to insert it into the Power Adapter Connector (J210) and not to the Mini-AB USB connector (J380), as shown in Figure 2-5.

To Connect the Power Supply

1. Connect the supplied Wall adapter to the Wall Adapter Connector (J230) (Figure 2-5).

   *The Wall Adapter Connector is located to the left of the Developer Board On/Off switch (labeled **Power***) at the rear of the Developer Board.*

2. Plug the adapter into a wall outlet.

Note: The G30 Developer Board can also be powered by an external DC power supply. This option is described in "Configuration" on page 16.

Power
Indicator LED

Wall-mount
Adapter Connector

Developer Board
On/Off Switch
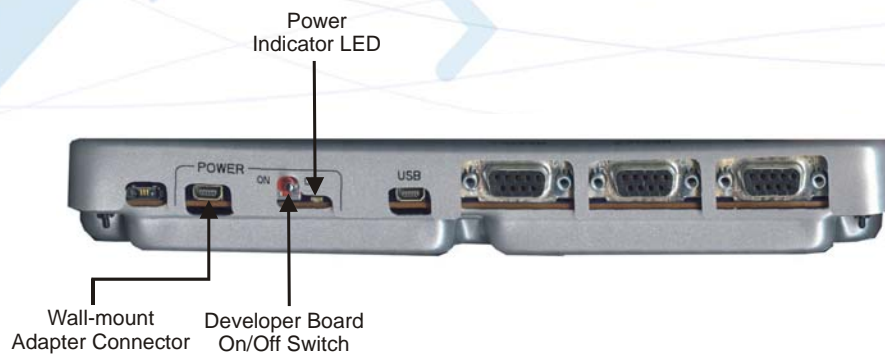
Figure 2-5: Developer Board Power Switch and Adapter Connector (Rear)

Serial Communications

RS232 serial interface is available for communicating with a PC. The G30 Developer's Kit includes the necessary RS232 cable for connecting to a PC.

To Connect Serial Communication Cables

- Connect (Figure 2-5) either the supplied RS232 cable with a male D-type connector to RS232-1 connector (J300), or to the RS232-2 connector (J330) for data logging.

The RS232 connector is located to the right of the Developer Board On/Off switch (labeled **Power***) at the rear of the Developer Board.*

Audio Devices

The G30 Developer's Kit has connectors that support the following audio devices:

- Headset (supplied)
- Microphone
- Speaker

To Connect Audio Devices

- Connect the supplied headset to the appropriate connector, labeled **HEADSET** (Figure 2-6)

The Audio Connectors are located on the left side of the Developer's Board.

Important: The G30 Developer Board enables connection of additional audio devices, which are not supplied with the Developer Kit. These devices are described in "Configuration" on page 16.

SPEAKER   MIC   HEADSET   ALERT

NA For G30

Headset Connector

Microphone Connector

Speaker Connector

Figure 2-6: Audio Connectors (Left Side)

External SIM Card

To Insert the SIM Card

Note: A test SIM card is provided with the G30 Developer's Kit.

- Insert a SIM card (Figure 2-7) into the SIM tray (J100) with the contacts down and the cut-off corner to the front and right

A diagram on the cover indicates how to insert the SIM card.
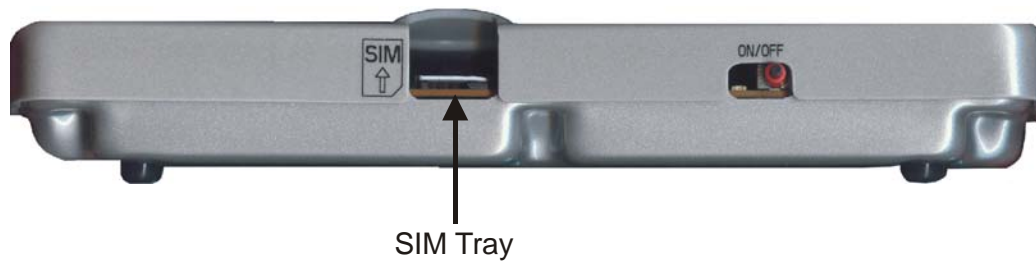
SIM Tray

Figure 2-7: SIM Tray

Note: When using a G30 with an Embedded SIM, verify the following:

1. A SIM card is not inserted into the SIM tray.
2. G30 "ESIM_RST" and "SIM_RST" signals are shorted on the EVB. This could be done by manually shorting P100 header pins 56 and 44.

Antenna

To Attach the Antenna

- Screw the supplied antenna into the antenna base, located at the bottom-right corner on top of the Developer's Kit.

  The Developer's Kit arrives configured to operate with its on-board internal antenna. The **EXT ANT** *and* **INT ANT** *connectors are connected together using an external RF cable, on the board's right side* (Figure 2-2 and Figure 2-3).

Power Up

Important: You must turn the Developer Board power on before turning on the G30.

To Turn on the Power

1. Turn on the Developer Board power by switching the power On/Off switch (S200) to **ON** (Figure 2-5).

   The Developer Board power On/Off switch (labeled **Power***) is located at the rear of the Developer Board.*

   The Developer Board power indicator LED is lit.

2. Turn on the G30 power by pressing the On/Off pushbutton (S110) for at least 0.5 seconds (Figure 2-8).

   The G30 power On/Off pushbutton is located at the front of the Developer Board.

The G30 On/Off LED is lit.
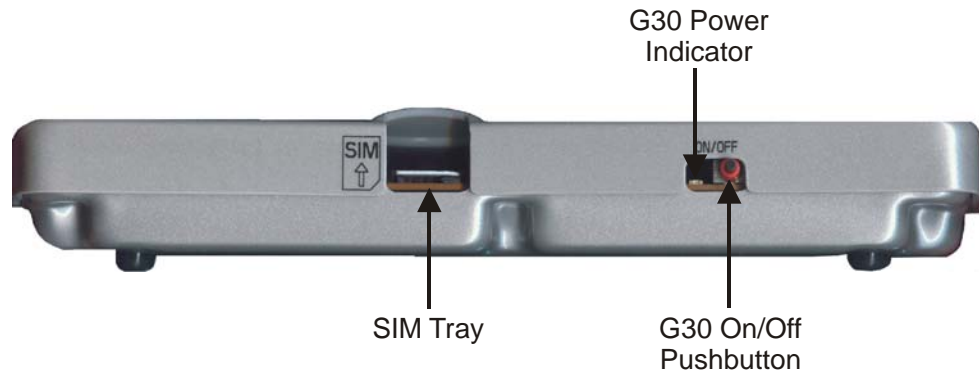
Figure 2-8: G30 On/Off Pushbutton and Power Indicator LED

Initial Setup of the Developer Board is now complete and the board is ready for use.
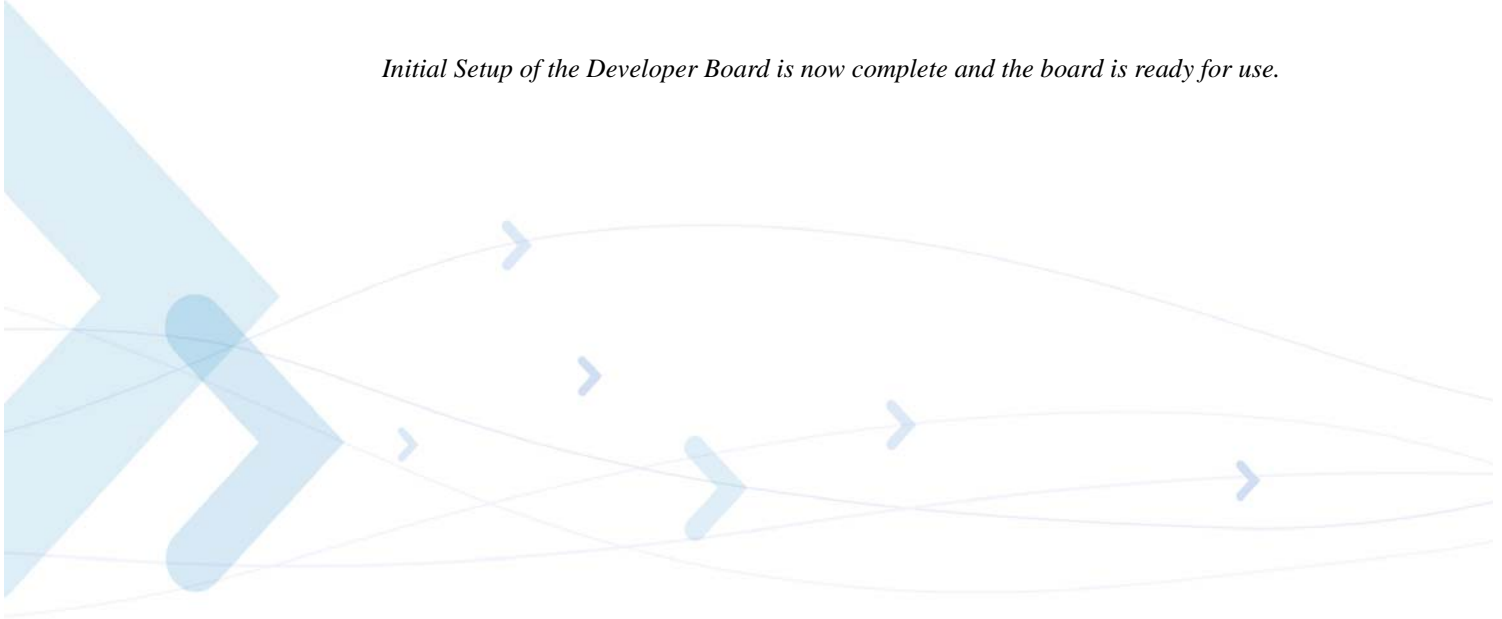
Configuration

After performing Initial Setup (previous section), you can continue using the Developer Board this default setup. This section describes how to change the default setup so you can use different peripherals or change default board operation.

Alternate Power Sources

The Developer Board power can be supplied from:

- Wall mount power adapter (See "Wall Mount Adapter Operation" on page 17.)
- External DC power source (See "DC Power Source Operation" on page 18.)

A single power source is used for the G30 and the board peripherals.

You must connect the Developer Board to a power source, and then set the power source jumper (P204), if necessary (See "Selecting the Power Source" on page 19.).

Two other jumpers (Figure 2-9) help control the power supply in the Developer Board:

- **P201**—Connects/disconnects the power from the Developer Board peripherals
- **P200**—Connects/disconnects the power from the G30
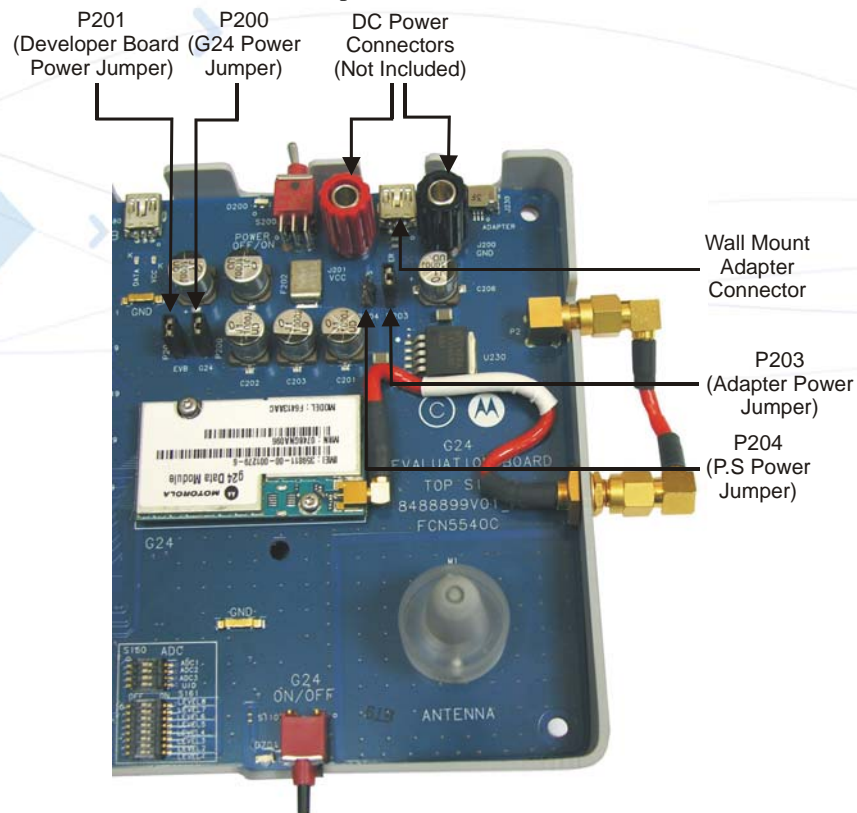
Figure 2-9: Power Supply Connectors, Jumpers and Switches

Each power supply option is described in the sections that follow.

Wall Mount Adapter Operation

To Use a Wall Mount Adapter

1. Connect the Wall mount adapter to the Power Adapter connector (J210) (Figure 2-10)

2. Verify that jumper P203 is connected and jumper P204 is disconnected (default setup).

Important: Verify that the Wall mount adapter is not connected to the USB connector (J380).
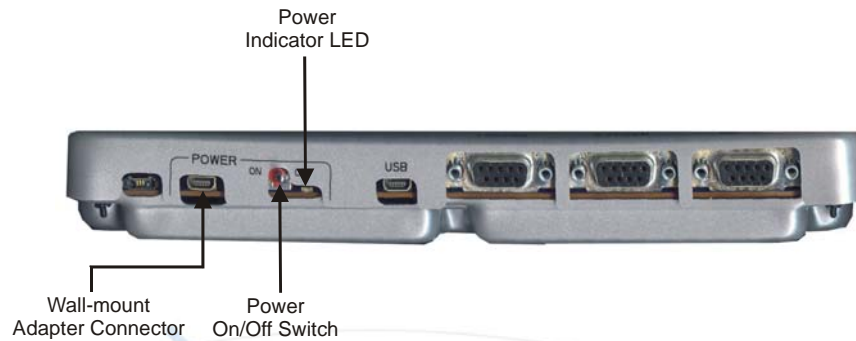
Figure 2-10: G30 Developer's Kit Wall Mount Adapter Connector

The Wall Mount Adapter connector is located at the rear of the Developer Board, immediately to the left of the Power On/Off switch.

The Wall Mount Adapter connector pinout is described in Table 2-1. The adapter supplies a constant 4.5 V, which is regulated to a nominal 4.1 V on the Developer Board.

Table 2-1: Wall Mount Adapter Connector Pinout (J210)

Pin #	Pin Name
1	GND
2	Not connected
3	Not connected
5	Detection circuit
6	VCC

Important: The G30 includes an on-board protection circuit for cases in which the USB connector is connected by mistake to the Wall Mount Adapter connector (J210).

If by mistake, the Mini AB USB cable is connected to J210 instead of J380, the on board Wall mount adapter is disabled, preventing unrequired load on the host computer.

DC Power Source Operation

To Use an External DC Power Supply

1. Remove the Developer Board cover.

   When using the DC power input connectors, the Developer Board cover must be removed.

2. Attach the DC input connectors to the Developer Board (Figure 2-11).

   Note: The DC input connectors are not included and should be purchased separately.

   Use the red connector for **VCC** *and the black one for* **GND**.
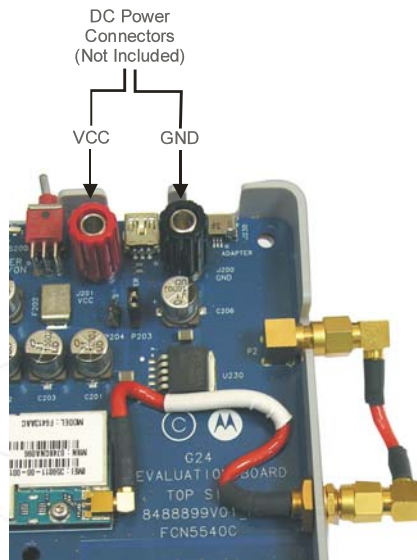
Figure 2-11: DC Input Connectors

3. Connect the external DC power supply to the **VCC** (J201) and **GND** (J200) connectors using banana plugs, alligator clips or wire.

4. Move jumper P203 to jumper P204.

Important: The DC voltage applied through this connection should not exceed the recommended operational limits of 3.3 V to 4.2 V. In any case, the DC source input is protected from over voltage and reverse polarity, and includes a protective fuse.

Important: The DC power source should not be used when other sources are connected.

Selecting the Power Source

The Developer Board can be powered using two different power sources:

- Wall-mount power adapter (default source)
- External DC power supply

Important: Only one power source can be used at any given time.

Two jumpers are used for selecting the power source - P203 for Wall-mount adapter and P204 for the external DC power supply (Figure 2-9). The jumpers position for each power source is described in Table 2-2.

Table 2-2: Power Source Jumpers (P203, P204)

Reference	Description	Jumper Connected	Jumper Not Connected
P203	Wall-mount adapter power selection jumper	Wall mount adapter is used as the power source for the G30 Developer board.	Wall adapter is NOT used.
P204	External DC power selection power.	DC power is used as the power source for the G30 Developer board.	DC power is NOT used.

Disconnecting Power

The Developer Board and G30 supplies are separated by two jumpers (P200, P201) (Figure 2-9) that allow disconnecting the power to the Developer Board or to the G30.

Developer Board. Disconnecting power to the Developer Board is generally used to diagnose a problem that may be caused by the board. This is independent of power supply to the G30, which will continue to receive power. The Developer Board Power jumper (P201) (Figure 2-9) positions for connecting and disconnecting power to the Developer Board are shown in Table 2-3.

G30. Disconnecting the power to the G30 is generally used to connect an amperometer to the jumper's two pins to measure the current through the G30. The G30 Power Jumper (P200) (Figure 2-9) positions for connecting and disconnecting power to the G30 are shown in Table 2-3.

Table 2-3: G30 Power Jumpers (P200, P201)

Reference	Description	Jumper Connected	Jumper Not Connected
P200	Connects/Disconnects G30 power.	G30 power is connected.	G30 power is Disconnected.
P201	Connects/Disconnects Developer board power.	Developer board power is connected.	Developer board power is Disconnected.

Communication Interfaces

The G30 Developer Board includes four serial interfaces (Figure 2-12):

• Primary RS232-1
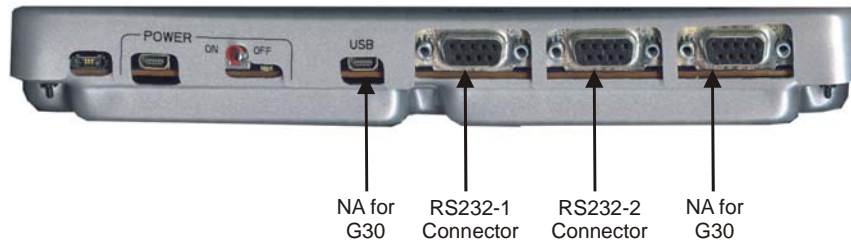
Figure 2-12: RS232-1 Connector

This serial interface is described in the sections that follow.

RS232-1

The 9-pin, D-type RS232-1 serial port (J300) is the primary interface to the G30. The G30 UART signals are active-low CMOS-level signals (0-2.7 V), which are converted by the Developer Board to standard RS232 levels for PC communications. The RS232-1 Connector Pinout (J300) is shown in Table 2-4.

Note: The RS232-1 connector pin names are DTE-oriented.

Table 2-4: RS232-1 Connector Pinout (J300)

Pin #	Description	DTE I/O
1	DCD	In
2	RXD	In
3	TXD	Out
4	DTR	Out
5	Ground	
6	DSR	In
7	RTS	Out
8	CTS	In
9	RI	In

RS232-2

The 9-pin, D-type RS232-2 serial port (J330) is used for data logger when G30 adapter is used.

Note: Only the G30 adapter supports Data logger. If G30 with 70 pin connector model is used, data logger is not applicable.

This UART signals are active-low CMOS-level signals (0-2.7 V), which are converted by the Developer Board to standard RS232 levels for PC communications. The RS232-2 Connector Pinout (J3300) is shown in Table 2-5.

Table 2-5: RS232-2 Connector Pinout (J330)

Pin #	Description	DTE I/O
1	NA	NA
2	RXD	In
3	TXD	Out
4	NA	NA
5	Ground	
6	NA	NA
7	RTS	Out
8	CTS	In
9	NA	NA

On-board Reset Button

Note: The On-Board Reset Button is applicable only when G30 adapter is used.

The S1 button is directly connected to G30 reset input pin. Pressing this button causes the module to perform soft reset. This is valid when the module is turned ON. See Figure 2-13.

Reset Button

Figure 2-13: G30 Reset Switch

Audio Interface

The Developer Board includes analog and digital audio interfaces. The audio interface contains a speaker - alert speaker, microphone, and a headset (Figure 2-14).
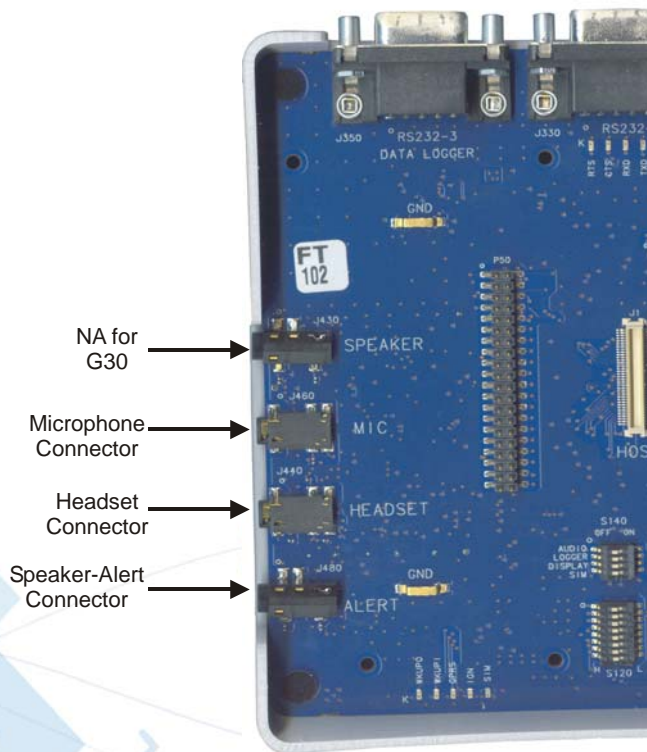
Figure 2-14: Audio Connectors

Analog Audio path:

- Handset mode: use "MIC" Input (pin 51), and differential speaker "ALRT_N", "ALRT_P" outputs (pins 63, 65 of the G30).
- Headset mode:
- When G30 with 70 pin connector is used, "MIC_HDST" Input (pin 57), "HDST_SPK" output (pin 54).
- When G30 adapter is used, "MIC_HDST" Input (pin 57), "HDST_SPK" output (pin 67).

Note: In order to operate the G30 EVB with the G30 70 pin connector module, pin 54 of the 70 pin connector, must be manually shorted with pin 67 of the 70 pin connector.
The short can be implemented using 70 pin Header "P100".

Alert - Speaker

The Developer Board uses an audio amplifier to amplify the speaker audio output to desired levels. The alert-speaker connector (J480) is labeled ALERT. The speaker output is 8 ohms impedance. The Speaker Connector pinout (J480) is shown in Table 2-6.

Table 2-6: Speaker Connector Pinout (J430)

Pin #	Description
1	Not connected
2	Speaker positive output
3	Not connected
4	Speaker negative output

Microphone

The microphone connector (J460) is labeled MIC. The Microphone Connector pinout (J460) is shown in Table 2-7.

Table 2-7: Microphone Connector Pinout (J460)

Pin #	Description
1	Ground
2	Not connected
3	Not connected
4	Microphone audio-in
5	Not connected
6	Grounding switch

Headset

The headset interface is designed as a portable phone audio interface, and is similar to a phone headset interface. The headset connector (J440), labeled HEADSET, includes a speaker, microphone and a detection signal. The speaker and microphone signals are directly connected to the G30 audio signals.

The Headset Connector pinout (J440) is shown in Table 2-8.

Table 2-8: Headset Connector Pinout (J440)

Pin #	Description
1	Ground
2	Headset-detect switch
3	Speaker audio-out

Pin #	Description
4	Microphone audio-in
5	Ground
6	Headset pull down

Audio Source Selection

The microphone and speaker audio can be routed through two different sources, the G30 audio amplifiers or the G30 digital audio interface. The Developer Board includes an on board CODEC that converts the G30 digital audio data to analog audio signals.

AUDIO switch of S140 (see Figure 2-21), selects the speaker and microphone source, as indicated in Table 2-9. This enables you to test the digital or analog audio channels.

Table 2-9: Audio Source Selection (S140-"AUDIO")

Reference	Description	"Off" State	"On" State
Audio	Selecting between Analog or Digital Audio.	Analog audio - audio sources are the G30 audio lines.	Digital audio - audio source is the on board CODEC.

Antenna

An antenna (internal or external) must be connected to the Developer Board for adequate GSM reception. You must connect the G30 to either the on-board internal antenna or to an external antenna.

Two RF connectors on the right side of the Developer Board, labeled **INT ANT** and **EXT ANT**, are used for setting up the antenna (Figure 2-15).
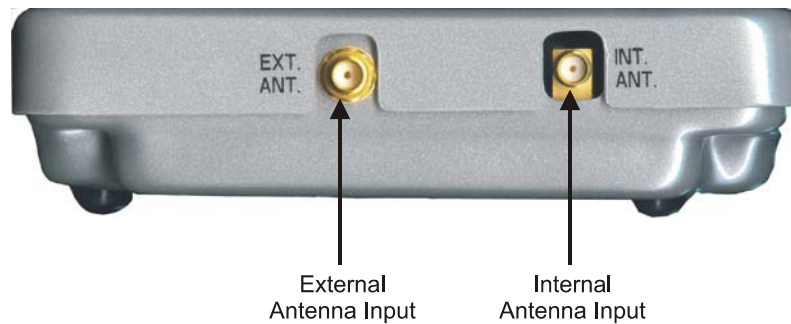
Figure 2-15: Antenna Connectors (external)

On the inside of the Developer Board, the **EXT ANT** connector is connected to the G30 and the **INT ANT** is connected to the on-board internal antenna.

To Connect to the Internal Antenna

- Connect the **EXT ANT** and **INT ANT** connectors with the additional RF cable supplied in the Developer's Kit (Figure 2-16 and Figure 2-17).

Note: This is the Developer Board's default configuration. The board arrives with the **EXT ANT** and **INT ANT** already connected.
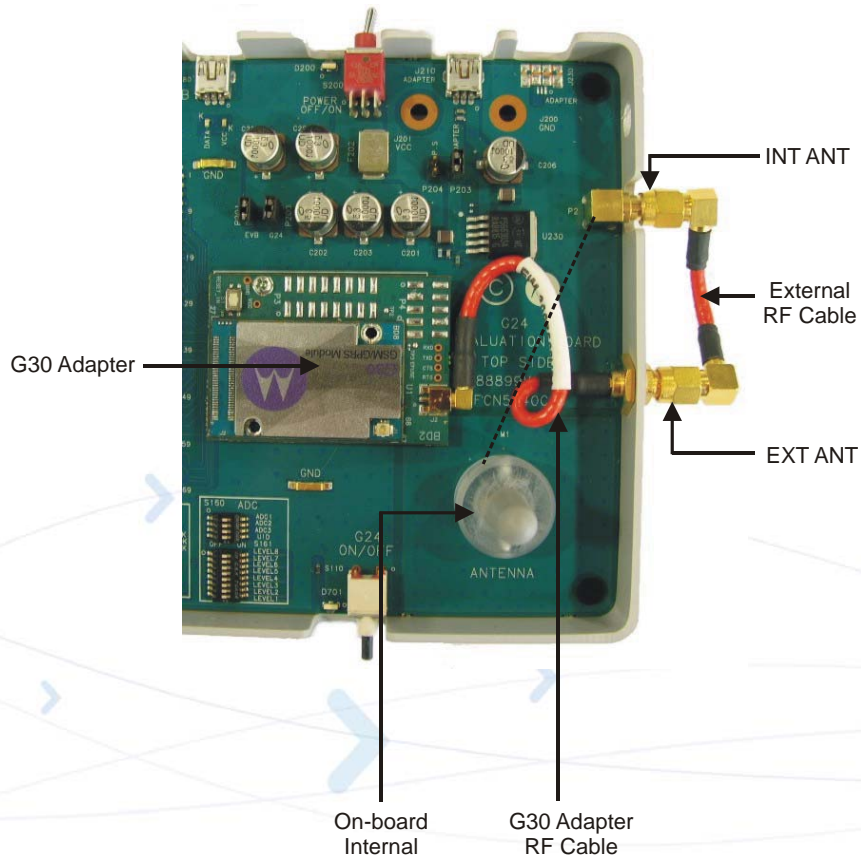
Figure 2-16: Antenna Connectors (internal) - For G30 Adapter
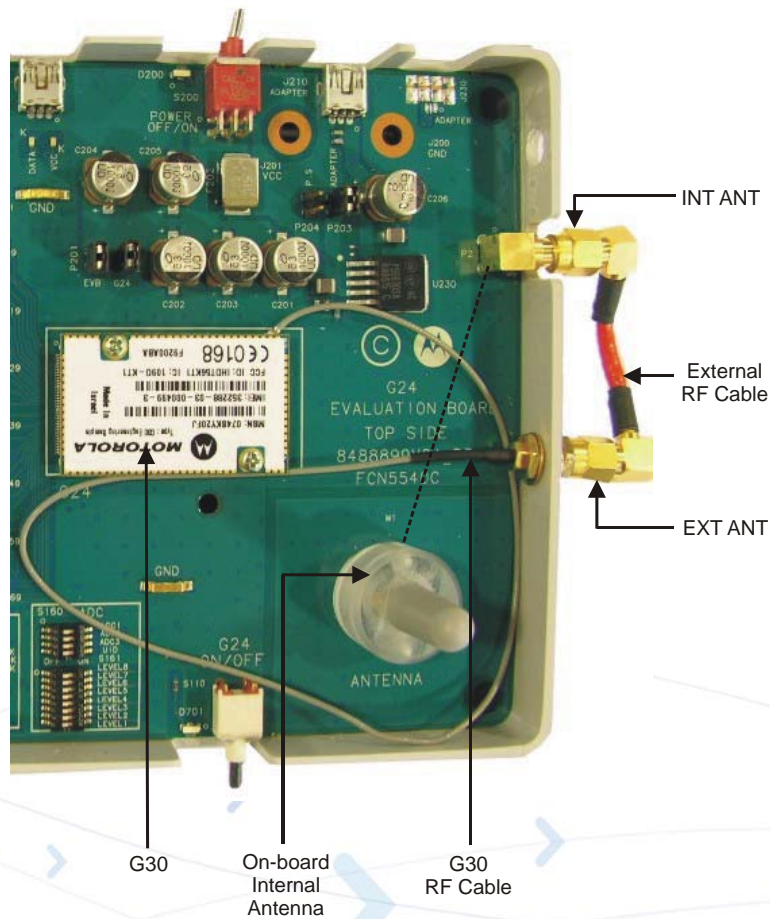
Figure 2-17: Antenna Connectors (internal) - For G30

<u>To Connect to an External Antenna</u>

1. Disconnect the external RF cable from the **EXT ANT** connector.

2. Connect an external antenna or antenna application to the **EXT ANT** connector (Figure 2-16 and Figure 2-17).

   The connection cable is not included.

Option Switches

The Developer Board contains 7 option switches that are described in the following paragraphs.

Analog to Digital Converter (ADC) - S160, S161

Important: Applying voltage to ADC lines before power up is forbidden and may cause G30
power up issues.

Note: G30 Adapter Board supports dual ADC. ADC1 and ADC2 are applicable.

Note: G30 ADC voltage input range is 0V-1.92V. Therefore, only level 1 to level 7 are
applicable.

The Developer Board can route up to 8 different analog voltage levels to the 3 G30 analog to
digital converters, using the S160 and S161 switches.

Figure 2-18 shows the ADC switches (S160, S161) provided on the Developer Board, which are
located on the S160, S161 components.

Important: S160 switches must be placed Off (all switches to left side) before power up.
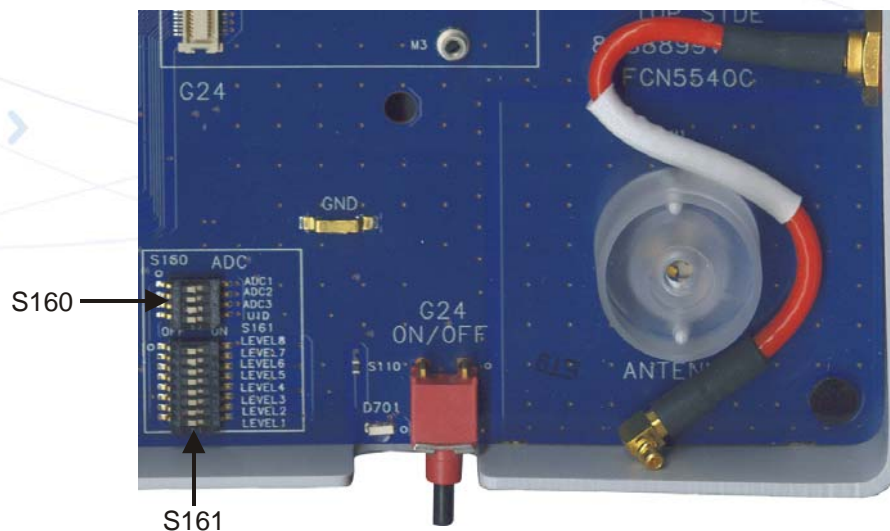
Figure 2-18: S160, S161 Switches

Voltage level is set using the S161 switches and routing of the voltage to the desired A/D is done
using the S160 switched.

When simulating a desired voltage level to either of the A/D lines, perform the following steps:

1. Turn the desired voltage level switch (labeled LEVEL1-LEVEL8) to ON.

Note: In order to have the correct voltage level, verify that only a single level switch is turned
ON.

2. Move the desired A/D input switch (labeled ADC1-ADC3) to ON. Selecting more then one ADC channel is allowed.

S161 switches are labeled LEVEL1 to LEVEL8 respectively. Voltage levels are shown in Table 2-10.

Table 2-10: Voltage Level Settings for A/D Switches (J161)

Reference	Analog Voltage Level
LEVEL8	NA
LEVEL7	Setting 1.93V
LEVEL6	Setting 1.59V
LEVEL5	Setting 1.24V
LEVEL4	Setting 0.96V
LEVEL3	Setting 0.68V
LEVEL2	Setting 0.37V
LEVEL1	Setting 0.06V

ADC channel mapping is shown in Table 2-11.

Table 2-11: A/D Selection Switch Settings (J160)

Reference	Description
ADC1	Routing voltage level to ADC1 (G30 J1/37)
ADC2	Routing voltage level to ADC2 (G30 J1/43)
ADC3	Do Not Use
N.C	Not Used

General Purpose I/O (GPIO) - S120

Note: The following GPIOs are G30 GPIO names. In order to verify the G30 GPIOs that are connected to these pins, refer to "G30 to 70 pin Adapter Board" on page 36.

The Developer Board can simulate all 8 G30 GPIO1-GPIO8 states using the S120 switches.

Figure 2-19 shows the GPIO switches provided on the Developer Board, which are located on the S120 component.

Figure 2-19: S120 Switches

GPIO signals mapping is shown in Table 2-12.

Table 2-12: GPIO Signals Mapping

Reference	Description
GPIO1	Map to GPIO1 signal (G30 J1/28)
GPIO2	Map to GPIO2 signal (G30 J1/30)
GPIO3	Map to GPIO3 signal (G30 J1/32)
GPIO4	Map to GPIO4 signal (G30 J1/34)
GPIO5	Map to GPIO5 signal (G30 J1/36)
GPIO6	Map to GPIO6 signal (G30 J1/38)
GPIO7	Map to GPIO7 signal (G30 J1/40)
GPIO8	Map to GPIO8 signal (G30 J1/42)

The G30 GPIO lines can be configured both as output or input lines. The Developer Board contains 8 LEDs, marked as GPIO1 through GPIO8, that indicate the GPIO state, regardless of its configuration.

The GPIO switches have two positions: Logic High (left position, marked with "H") and Logic Low (Right position, marked with "L"). When setting a switch to "H" (default position), the GPIO line is not connected (uses the internal G30 pull-up resistor), when setting the GPIO to "L", the line is being shorted to ground.

Caution: In order to avoid unnecessary load on one of the GPIO lines, verify that when a GPIO line is configured as an output and is set to logic High state, the corresponding GPIO switch is set to "H".

UID - S170

  Note: The UID S170 is not applicable for G30 Adapter Board/G30.

Figure 2-20 shows the UID switches provided on the Developer Board, which are located on the S170 component.

Figure 2-20: S170 Switches

General Function Switch - S140

  Note: The S140 is not applicable for G30 Adapter Board/G30.

Figure 2-21 shows the S140 switches.
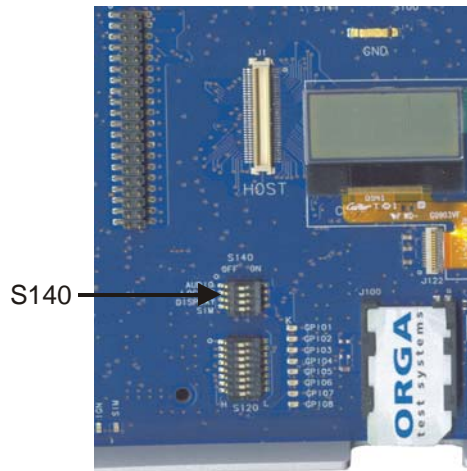
Figure 2-21: S140 Switches

The S140 switches description and functionality are shown in Table 2-13.

Table 2-13: S140 Switches Functionality

Reference	Description	"Off" State	"On" State
AUDIO	Selecting the audio speaker output path.	Disabling the on board audio CODEC to Audio speaker. Speaker and microphone analog audio are routed from the G30 module.	Enabling the on board audio CODEC to Audio speaker. Audio is routed using the G30 digital audio signals.
LOGGER	Used for development only. Verify that the switch is always at "OFF".	Switch should always be at this state.	
DISPLAY			
SIM			

General Function Switch - S141

   Note: The S141 is not applicable for G30 Adapter Board/G30.

The S141 switches are used for development purpose only and should remain at OFF (left position) for proper use of the G30.
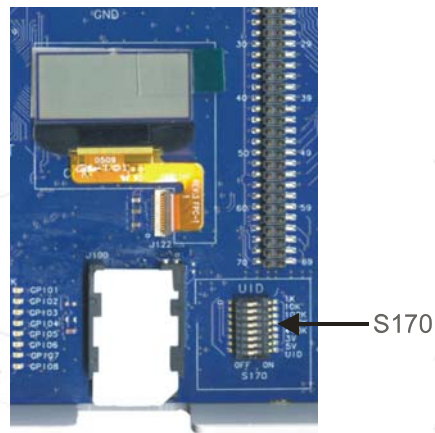
Figure 2-22 shows the S141 switches.
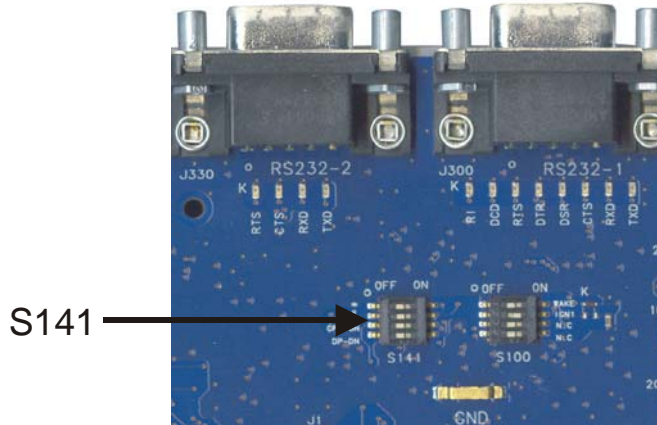
Figure 2-22: S141 Switches

General Function Switch - S100

  Note: The S100 is not applicable for G30 Adapter Board.

Figure 2-23 shows the S100 switches.
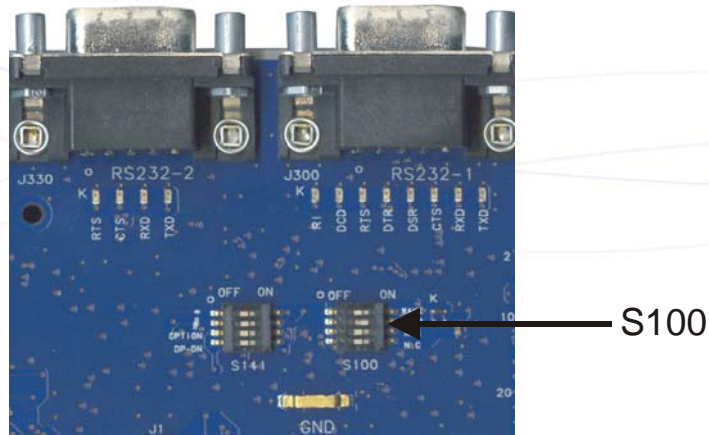
Figure 2-23: S100 Switches

SIM Card

The SIM card connector (J100) is external to the G30, but is connected directly to it, similar to an internal SIM. The G30 can accept 3V SIM cards. The SIM Connector pinout (J100) is shown in Table 2-14.

Table 2-14: SIM Connector Pinout (J100)

Pin	Description
1	Ground
2	Presence detect
3	Clock
4	Reset
5	VCC
6	Serial data I/O
7	VPP (not connected)
8	Ground

G30 detects the presence of the SIM card through the SIM_PD signal. This signal is configured in the G30 as Active-Low.

Host Connection

An external application may communicate with the G30 through the host connector (J1) (Figure 2-24) and control some or all of the G30's functions. The host connector enables you to integrate the G30 into an application without installing the G30 inside the product.

The host connector operates in parallel with the Developer Board peripherals and enables an external application to share G30 resources with the Developer Board. You may select any G30 function to control externally, through the host connector, and allow the Developer Board to control other functions.

70-pin
Host Connector

G30 70-pin
Header Connector

G30/G30 Adapter
70-pin Connector
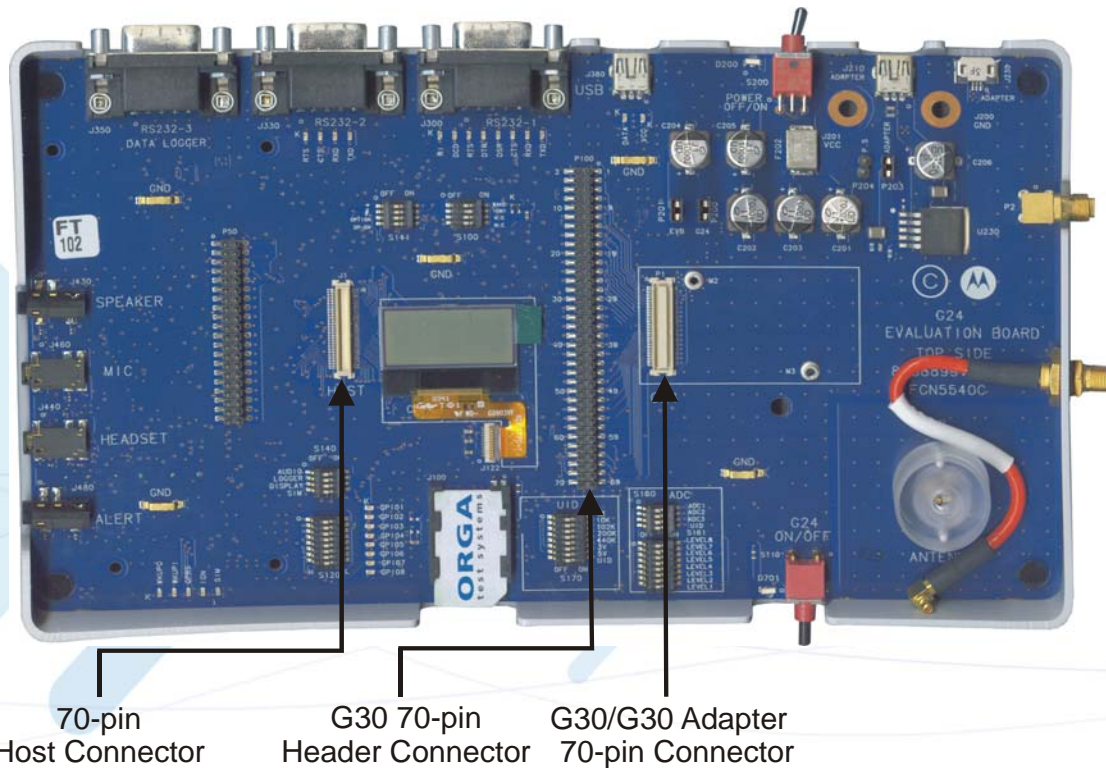
Figure 2-24: 70-pin Connectors

You can connect an external application to the G30 Developer Board using a host interconnect flex cable and connecting it to the host connector (J1). Connect the other end of the cable to the external application. The cable is an optional accessory.

All pin numbers and functions of the host connector are identical to those of the G30 (P1) and the G30 diagnostic connector (P100). For more information on the pins of the host connector, refer to "G30 to 70 pin Adapter Board" on page 36.

These are guidelines for using the host connector:
- When using an external SIM card through the host connector, the Developer Board SIM card tray must be empty
- When using any of the serial communication channels (RS232, LOGGER) through the host connector, the Developer Board serial connectors should not be used
- When using the WAKEUP functions through the host connector, the functions should be switched off on the Developer Board switches
- When using the analog audio channels through the host connector, disconnect all audio devices from the Developer Board

- It is recommended to place the audio selection switch (S140 - AUDIO) to analog audio mode (OFF)
- When connecting an external application that provides the power to the G30 and the Developer Board, remove any other power sources from the Developer Board

Components and Specifications

Connectors Description

All the Developer Board connectors are marked by their reference number and by a pin-1 indicator. Table 2-15 describes the available connectors on the Developer Board.

Table 2-15: Developer Board Connectors

Reference	Connector	Description
Internal Connectors (not visible when cover is on)		
P1	G30 UUT	G30 UUT (Unit Under Test) connector
J1	Host	Emulates the G30 connector for host systems
P100	Header	Debug header connector (70-pin)
P50	Header	For development use only
J201	VCC	Developer Board DC power supply
J200	GND	Developer Board common ground
External Connectors (visible when cover is on)		
J380	USB	USB mini AB-type connector, applicable for G30 Adapter Board with charger model
J300	RS232-1	Primary RS232 to PC
J330	NA	
J350	NA	
J430	Speaker	Hands-free system speaker jack
J460	Microphone	Hands-free system microphone jack
J440	Headset	Headset jack
J480	NA	
J210	AC adapter/charger	Wall-mount adapter connector
J100	SIM card	SIM card socket with detection
P2	Antenna connector	SMA connector for internal antenna
M1	RF Antenna	Internal antenna

G30 to 70 pin Adapter Board

The following table lists the pin names and functions available for the G30 to 70 pin interface connector. All pin numbers and functions are identical to the G30 (P1), host (J1) and G30 Diagnostic (P100) connectors on the Developer Board.

@70 Pin Conn.	Pin No.	Name	I/O	Function
36	1	GPIO5	I/O	GPIO
38	2	GPIO6	I/O	GPIO
56	4	eSIM_RESET	I	Embedded SIM reset
40	5	GPIO7	I/O	GPIO
42	6	GPIO8	I/O	GPIO
62	7	SPI_IRQ	I	SPI Interrupt Input
			I/O	Capture/Compare
			I/O	GPIO
	12	GPIO9	I/O	GPIO
41	13	ANT_DET	I/O	GPIO
			O	Antenna Detect
26	14	WKUPO	I/O	GPIO
			O	Wake-Up Out
49	16	GPRS	I/O	GPIO
			O	GPRS
53	18	PWR_ON	I	Power-on/off input
48	20	VSIM	O	SIM supply output
44	21	SIM_RST	O	External SIM reset
52	22	SIM_IO	I/O	SIM data
46	23	SIM_CLK	O	SIM clock
16	25	WKUPI	I/O	Capture/Compare
			I	Wake-Up In
25	27	RESET_IN	OC	External reset input
34	33	GPIO4/SCL	O	I^2C bus clock line
			I/O	GPIO

@70 Pin Conn.	Pin No.	Name	I/O	Function
32	**34**	GPIO3/SDA	I/O	I^2C bus data line
			I/O	GPIO
43	**35**	ADC2	I	Analog-to-Digital Converter Input
37	**36**	ADC1	I	Analog-to-Digital Converter Input
23	**37**	RI	O	Ring Indicator
			I/O	GPIO
17	**38**	DCD	O	Data Carrier Detect
13	**39**	DSR	O	Data Set Ready
19	**40**	DTR	I	Data terminal ready
9	**41**	RTS	I	Ready to send
15	**42**	CTS	O	Clear To Send
21	**43**	TXD	I	Transmitted Data GPIO
11	**44**	RXD	O	Received Data GPIO
66	**45**	SPI_CLK	O	SPI Clock Short to Pin 57
54	**47**	HDST_SPK	O	Low power single-ended analog audio output
63,67	**48**	SPKR_N	O	High power differential analog audio output
65,69	**49**	SPKR_P	O	High power differential analog audio output
55	**50**	HDST_INT	I	Headset detection input
			I	External interrupt input
			I/O	GPIO
61	**51**	MIC	I	Headset microphone analog bias
59	**52**	AGND1	I	Handset microphone analog reference
57	**53**	MIC_HDST	I	Headset microphone analog bias

@70 Pin Conn.	Pin No.	Name	I/O	Function
59	54	AGND2	I	Headset microphone analog reference
18	55	RXD_DAI	I	I2S receive data Short to pin 61
24	56	WA0_DAI	O	I2S word alignment Short to pin 60
22	57	CLK_DAI	O	I2S clock Short to pin 45
20	58	TXD_DAI	O	I2S transmit data Short to pin 63
50	59	SIM_PD_n	I	SIM present detect
68	60	SPI_MOSI	O	SPI sync data (MOSI) Shorted to pin 56
64	61	SPI_MISO	I	SPI sync data (MISO) Shorted to pin 55
60	62	VRTC	I/0	Real Time Clock Supply Output
70	63	SPI_CS	O	SPI chip select Short to pin 58
1,2,3,4	65	GND	NA	Ground
N.C	66	ANT	I/O	RF antenna
1,2,3,4	67	GND	NA	Ground
1,2,3,4	68	GND	NA	Ground
1,2,3,4	69	GND	NA	Ground
1,2,3,4	70	GND	NA	Ground
1,2,3,4	71	GND	NA	Ground
1,2,3,4	72	GND	NA	Ground
1,2,3,4	73	GND	NA	Ground
1,2,3,4	74	GND	NA	Ground
1,2,3,4	75	GND	NA	Ground
1,2,3,4	76	GND	NA	Ground
1,2,3,4	77	GND	NA	Ground
5,6,7,8	78	VCC	I	Voltage Supply Input
5,6,7,8	79	VCC	I	Voltage Supply Input
28	80	GPIO1	I/O	GPIO
30	81	GPIO2	I/O	GPIO
27		VREF	O	Reference voltage supply

Not Connected – Refer to "RF Recommendation in G30 Module Description Manual".

Important: Applying voltage to ADC lines before power up is forbidden and may cause G30 power up issues.

Switches and Jumpers

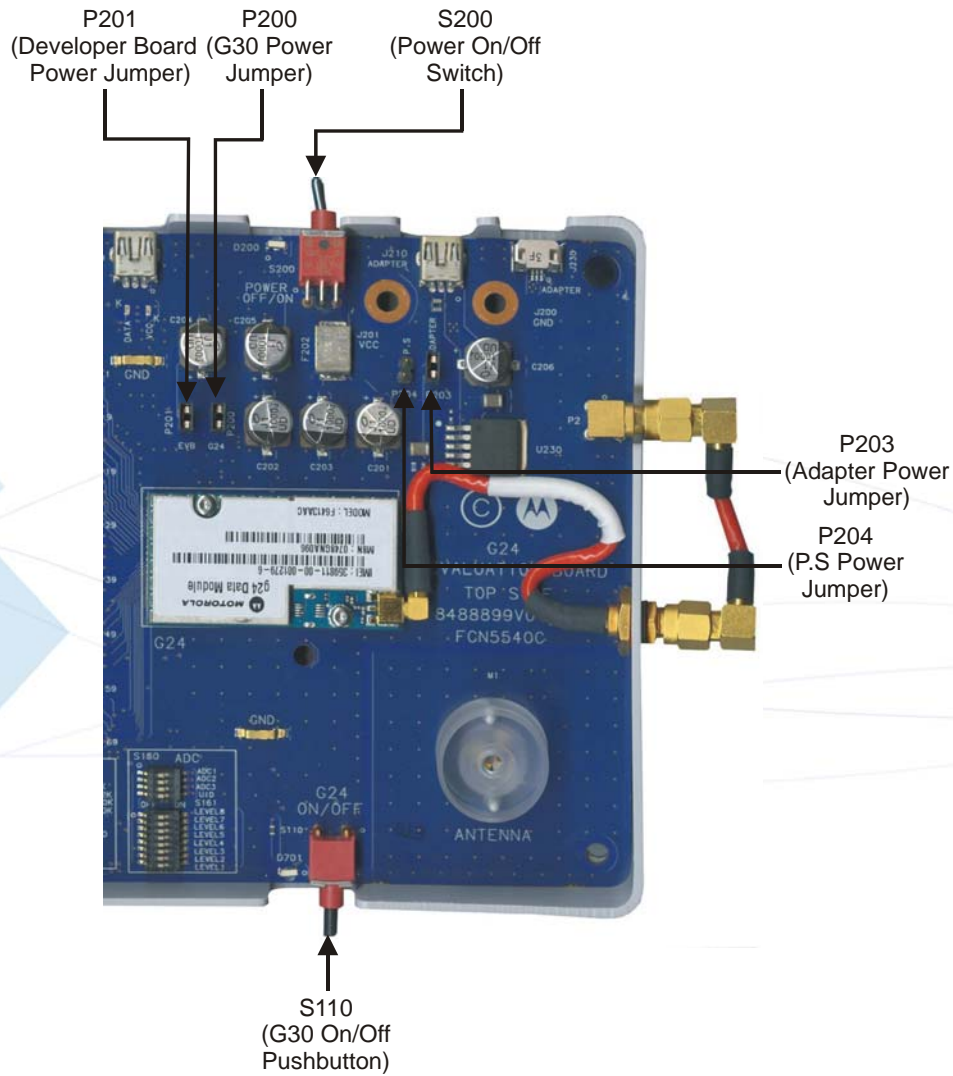shows the jumpers and switches on the Developer Board.

Figure 2-25: Jumpers and Switches on Developer Board

Table 2-16 describes the available switches and jumpers on the Developer Board.

Table 2-16: Developer Board Switches and Jumpers

Reference	Switch/Jumper	Description
Switches		
S200	Board on/off	Developer Board on/off switch
S110	G30 on/off	G30 on/off pushbutton switch
S100	General Function Switch	Four switches for Developer Board options
S141	NA	
S140	NA	
S120	GPIO Switch	Eight switches for GPIO signals
S170	UID Switch	Eight switches for development use only
S160	ADC Switch	Eight switches for simulating ADC signals
S161	ADC Switch	Eight switches for simulating ADC signals

Table 2-16: Developer Board Switches and Jumpers (Cont.)

Reference	Switch/Jumper	Description
Jumpers		
P201	EVB	Peripheral power input jumper
P200	UUT	G30 UUT power input jumper
P203	ADAPTER	Wall mount adapter power source selection jumper
P204	P.S	External power supply, power source selection jumper

LED Indicators

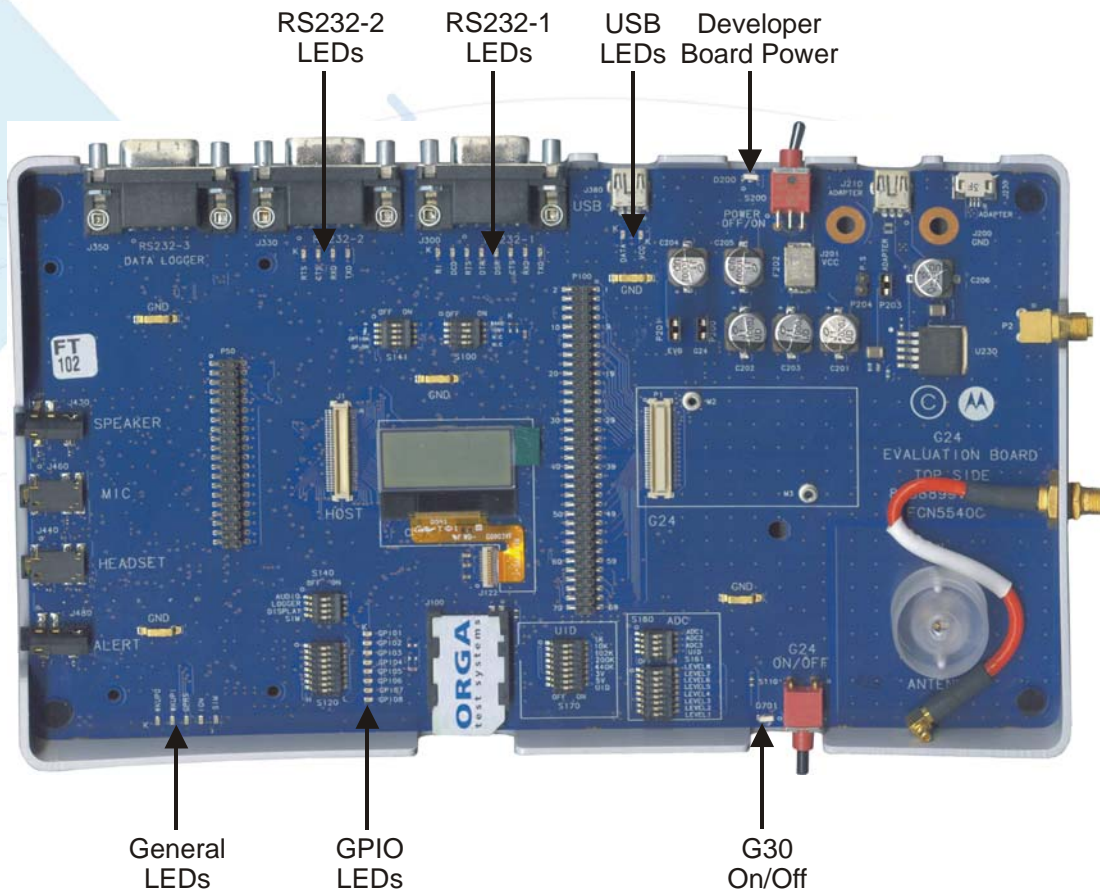Figure 2-26 shows the LEDs on the Developer Board.

**Figure 2-26: LEDs on Developer Board**

> **Note:** Some LED indicators detailed in the table below are not applicable for G30 Adapter Board.

Table 2-17 describes the LED indicators on the Developer Board. Each LED is marked on the board by the function it represents.

Table 2-17: Developer Board LED Indicators

Group	LED	Reference	Description
General	WAKEUPO	D768	Wake-up out
	WAKEUPI	D704	Wake-up in
	IGN	D702	Ignition input
	GPRS	D710	GPRS/EGPRS coverage indication
	SIM	D707	SIM card reset indication
GPIO	GPIO1	D760	General purpose I/O 1 signal
	GPIO2	D761	General purpose I/O 2 signal
	GPIO3	D762	General purpose I/O 3 signal
	GPIO4	D763	General purpose I/O 4 signal
	GPIO5	D764	General purpose I/O 5 signal
	GPIO6	D765	General purpose I/O 6 signal
	GPIO7	D766	General purpose I/O 7 signal
	GPIO8	D767	General purpose I/O 8 signal
Power	G30	D701	G30 on/off
	Power	D200	Developer Board Power
USB	VCC	D780	USB VBUS
	DATA	D711	USB D+
RS232-1	RXD	D722	DTE receive data
	TXD	D721	DTE transmit data
	RTS	D724	Request to send
	CTS	D723	Clear to send
	DTR	D725	Data terminal ready
	DSR	D726	Data set ready
	DCD	D727	Carrier detect
	RI	D728	Ring indicator
RS232-2	RXD	D743	DTE receive data
	TXD	D742	DTE transmit data
	CTS	D744	Clear to send
	RTS	D745	Request to send

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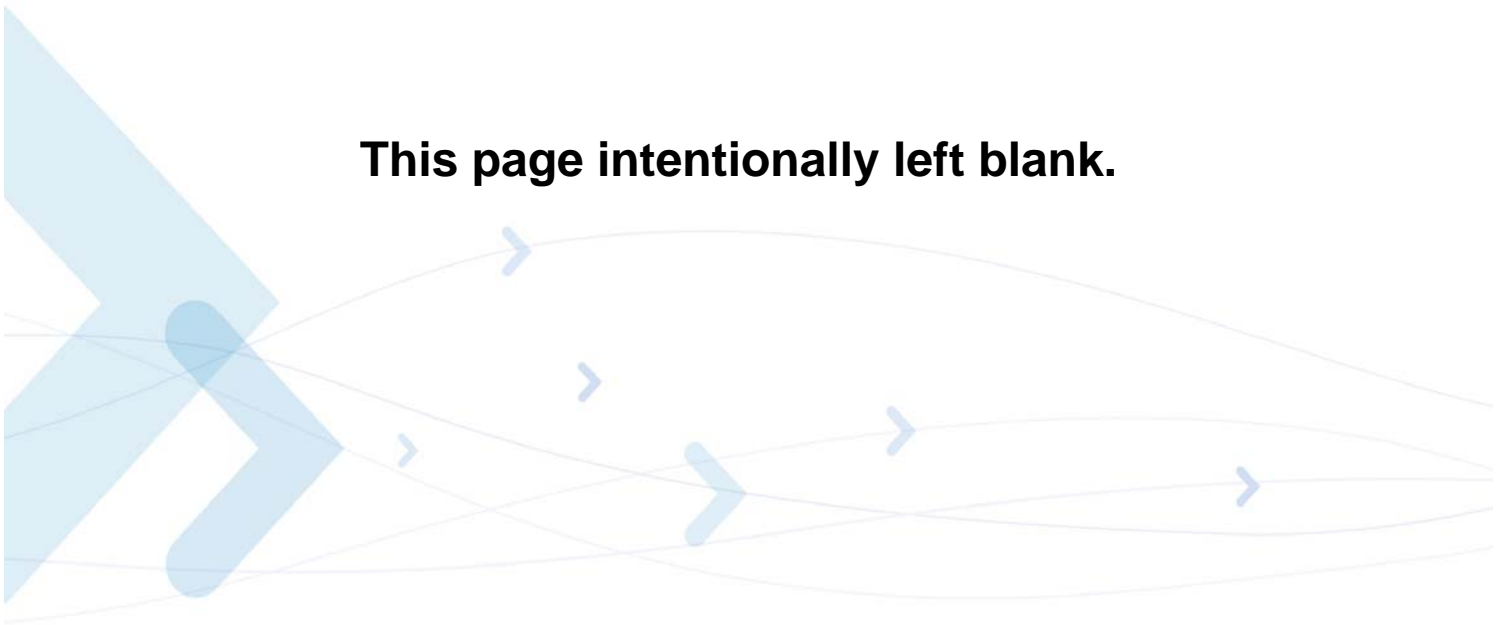
Chapter 3: Service and Troubleshooting

Service

This section provides contact information for any possible queries that may arise, for example:

- Have questions?
- Having trouble getting the Developer Board set up?
- Technical questions?
- Configuration questions/problems?
- Technical operating problems?
- Need documentation?

Who to Contact?

The **Customer Care Group** is ready to assist you on integration issues.

Direct Customer

Use this following email address to contact customer assistance:
M2M.CustomerCare@motorola.com

> **Note:** The support services provided by Motorola are subject to the agreement between the customer and Motorola and may be at an additional charge to the customer. Motorola will inform the customer in advance of any such charge.

Indirect Customer

Please contact your Motorola licensed distributor.

Troubleshooting

Table 3-1 lists problems that may occur during board operation, and describes how to resolve them. If the problem persists, please contact your Motorola representative.

Table 3-1: Troubleshooting

Problem	Indication	Action
Power		
Developer board does not power up	Power LED does not light	Check the power source connection. If using an external DC power source, verify that the supply is within the limits of 3.3 V to 4.2 V. Verify that the board power switch (S200) is on. Check the source jumper (P203 or P204) position. Verify that the EVB jumper (P201) is present.
The G30 does not power up or does not communicate	The G30 on/off LED doesn't light or lights for a short period	Check the G30 connection to the Developer Board. Verify that the UUT jumper (P203 or P204) is present. Depress the G30 on/off pushbutton for a longer period.
	The G30 on/off LED lights up automatically when power is applied	Contact your Motorola representative.
	The G30 on/off LED blinks	
High current consumption	The resetable fuse is turned on	Check the polarity of the DC power inputs. Verify that only one optional power source is connected.
GSM Reception		
No GSM reception available	The G30 unit searches unsuccessfully for network	If using an external DC power source, verify that the supply is within the limits of 3.3 V to 4.2 V. Fasten the G30 to the board with the supplied screws. Check the MMCX RF cable connection to the G30. Fasten the RF cable connections between the EXT ANT and INT ANT connectors. Fasten the onboard antenna stub into its base.
SIM card		
The SIM card does not operate	The SIM LED does not illuminate	Verify that the SIM card operates at 3 V. Verify that the SIM card is inserted properly into its tray.
Serial Communications		
The RS232 port does not work with the PC	The PC does not communicate	Check the serial cable connection to the PC. Verify that the PC port settings comply with the G30 defaults.
	Incorrect RS232 LEDs are lit	Contact your Motorola representative.
Audio		
The headset does not work	No sound in the headset earpiece or No sound is produced from the headset microphone	Verify that the headset is inserted correctly into the headset (J440) audio connector. Use only the supplied headset. Check the G30 volume level.

Acronyms and Abbreviations

Abbreviation	Full Name
A	
ADC	Analog to Digital Converter
C	
CMOS	Complementary Metal Oxide Semiconductor
CODEC	Coder-Decoder
D	
DIAG	Diagnostics
DTE	Data Terminal Equipment (such as terminals, PCs and so on)
E	
EGPRS	Enhanced General Packet Radio Service
EME	Electromagnetic Emission
ESD	Electro-Static Discharge
EVB	Evaluation Board
G	
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
I	
IRQ	Interrupt Request
L	
LED	Light Emitting Diode
M	
MIDI	Musical Instrument Digital Interface
MMCX	Mini Micro Coax
MMI	Man-Machine Interface

Abbreviation	Full Name
O	
OEM	Original Equipment Manufacturer
P	
PCM	Pulse Code Modulation
R	
RF	Radio Frequency
S	
SIM	Subscriber Identity Module
SPI	Serial Peripheral Interface
U	
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus
UUT	Unit Under Test

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