

GE864-QUAD AUTOMOTIVE V2

Product Description

80331ST10066a Rev.0 –2010-01-19



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1. Introduction

1.1. Scope

Scope of this document is giving an overview of the Telit GE864-QUAD AUTOMOTIVE V2 module, which is a very small GSM/GPRS module with data and voice capabilities for automotive applications.

1.2. Audience

This document is intended for customers who are evaluating the GE864-QUAD AUTOMOTIVE V2.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:

<http://www.telit.com/en/products/technical-support-center/contact.php>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4. Document Organization

This document contains the following chapters:

[“Chapter 1: “Introduction”](#) provides a scope for this document, target audience, contact and support information, and text conventions.



- Audio Settings Application Note, 80000NT10007a
- Event Monitor Application Note, 80000NT10028a
- Easy GPRS User Guide, 80000ST10028
- Digital Voice Interface Application Note, 80000nt10004a
- EVK2 User Guide, 1w0300704
- PFM Application Note, 80000nt10013a

1.7. Document History

Revision	Date	Changes	Location
0	2010-01-19	First issue	Trieste



2. The GE864-QUAD AUTOMOTIVE V2

2.1. Product Overview

The new GE864-QUAD AUTOMOTIVE V2 product introduces the smallest GSM/GPRS Ball-Grid-Array (BGA) module in the market.

The GE864-QUAD AUTOMOTIVE V2 extends Telit range of BGA products, incorporating a single-chip solution built on 0.13 μm CMOS technology into a 30 x 30 x 3 mm block.

The low profile and small size of the unique BGA package for the GE864-QUAD AUTOMOTIVE V2 enables the design of extremely compact applications. Since connectors are eliminated, the solution cost is significantly reduced compared to conventional mounting.

With its ultra-compact design and extended temperature range, the Telit GE864-QUAD AUTOMOTIVE V2 product is the perfect platform for high-volume m2m applications and mobile data devices. Additional features such as integrated TCP/IP protocol stack and serial multiplexer extend the functionalities of the application at no additional cost.

The GE864-QUAD AUTOMOTIVE V2 makes it possible to run the customer's application inside the module using Python Script Interpreter, thus making it the smallest, complete platform for m2m solutions.

The GE864-QUAD AUTOMOTIVE V2 module supports Over-the-Air firmware update by means of Premium FOTA Management. By embedding the RedBend vCurrent Mobile® agent, a proven and battle-tested technology powering hundreds of millions of cellular handsets world-wide, Telit is able to update its products by transmitting only a delta file, which represents the difference from one firmware version to another.

2.2. Target Market

The GE864-QUAD AUTOMOTIVE V2 is designed and developed for the usage in applications such as:

- Telemetry
- Telematics
- Security alarms
- Automated Meter Reading (AMR)
- POS terminals
- PDAs and Mobile Computing
- Automotive and Fleet Management applications



2.3. Product Features

- Quad-band EGSM 850 / 900 / 1800 / 1900 MHz
- GSM/GPRS protocol stack 3GPP Release 4 compliant
- Output power
 - Class 4 (2W) @ 850 / 900 MHz
 - Class 1 (1W) @ 1800 / 1900 MHz
- Control via AT commands according to 3GPP 27.005, 27.007 and Telit custom AT commands
- Control via Remote AT commands
- Event Monitor engine (ref: Event Monitor Application note)
- Power consumption (typical values)
 - Power off: < 62 uA
 - Idle (registered, power saving): 1.6 mA @ DRX=9
- Serial port multiplexer 3GPP 27.010
- SIM Application Toolkit 3GPP TS 51.014
- SIM Access Profile
- Extended Supply voltage range: 3.22 – 4.5 V DC (3.8 V DC nominal)
- TCP/IP stack access via AT commands
- Sensitivity:
 - ≤- 107 dBm (typ.) @ 850 / 900 MHz
 - ≤- 106 dBm (typ.) @ 1800 / 1900 MHz
- DARP/SAIC support
- Enhanced Measurement Report support
- Dimensions: 30 x 30 x 3 mm
- Weight: 5 grams
- Extended temperature range
 - 40°C to +85°C (operational)
 - 40°C to +85°C (storage temperature)
- RoHS compliant
- AT interface on both serial ports
- Added PCM voice signal on UART



- Enhanced AT Commands suite (FTP additional commands, Command mode TCP)

Interfaces

- 10 I/O ports maximum
- Analog audio (balanced)
- Digital Voice Interface
- 2 A/D plus 1 D/A converters
- Buzzer output
- ITU-T V.24 serial link through CMOS UART:
 - Baud rate from 300 to 115.200 bps
 - Autobauding 1200 up to 115.200 bps
- Two wires RS232, CMOS level (ASC1) for PYTHON debug:

Audio

- Telephony, emergency call
- Half rate, full rate, enhanced full rate and adaptive multi rate voice codecs (HR, FR, EFR, AMR)
- Superior echo cancellation & noise reduction
- Multiple audio profiles pre-programmed and fully configurable by means of AT commands (ref.: Audio Settings Application Note)
- DTMF

Approvals

- Fully type approved conforming with R&TTE directive
- CE, GCF, FCC, PTCRB, IC

SMS

- Point-to-point mobile originated and mobile terminated SMS
- Concatenated SMS supported
- SMS cell broadcast
- Text and PDU mode
- SMS over GPRS



- EASY SCAN ® automatic scan over GSM frequencies (also without SIM card)

Additional tests

- ISO 16750-1:2003, Road vehicles — Environmental conditions and testing for electrical and electronic equipment :
 - [1] ISO 16750-1:2003, Part 1: General
 - [2] ISO 16750-3:2003, Part 3: Mechanical loads
 - [3] ISO 16750-4:2003, Part 4: Climatic loads
- CISPR 25, 2nd Edition: Radiated Emission ALSE method

PIN Protection

- ESD protection level 4
 - Contact up to +-4kV
 - Air up to +-8kV
 - Contact antenna pin up to +-15kV

Python* application resources

- Python* script interpreter (module takes the application code directly in the Python* language)
- Memory: 1.9 MB of NV memory for the user scripts and 1 MB RAM for the Python* engine usage
- Over-the-air application SW update
- Script execution speed increased up to 4 times compared to the GE864-QUAD

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Copyright © 1995–2001 Corporation for National Research Initiatives; All Rights Reserved.
Copyright © 2001–2009 Python Software Foundation; All Rights Reserved.
All Rights Reserved are retained in Python.



3.2. Weight

The weight of the GE864-QUAD AUTOMOTIVE V2 is 6 grams.

3.3. Environmental requirements

3.3.1. Temperature range

		Note
Operating Temperature Range	-30°C ÷ +85°C	The module is fully functional(*) in all the temperature range, and it fully meets the 3GPP specifications.
	-40°C ÷ +85°C	The module is fully functional (*) in all the temperature range.
Storage and non operating Temperature Range	-40°C ÷ +90°C	

(*)Functional: the module is able to make and receive voice calls, data calls, SMS and make GPRS traffic.

3.3.2. RoHS compliance

As a part of Telit's corporate policy of environmental protection, the GE864-QUAD AUTOMOTIVE V2 product comply to the RoHS (Restriction of Hazardous Substances) directive of the European Union (EU Directive 2002/95/EG).

3.4. Operating Frequency

The operating frequencies in GSM, DCS, PCS modes are conform to the GSM specifications.

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels (ARFC)	TX - RX offset
GSM 850	824.2÷848.8	869.2÷893.8	124 ÷ 251	45 MHz
EGSM 900	890.0 - 914.8	935.0 - 959.8	0 ÷ 124	45 MHz
	880.2 - 889.8	925.2 - 934.8	975 ÷ 1023	45 MHz
DCS-1800	1710.2 - 1784.8	1805.2 - 1879.8	512 ÷ 885	95 MHz
PCS-1900	1850.2 - 1909.8	1930.2 - 1989.8	512 ÷ 810	80 MHz



- Mobile Originated class 0 – 3 with writing, saving in SIM and sending
- Cell broadcast compatible with CB DRX with signaling of new incoming SMS.

The GE864-QUAD AUTOMOTIVE V2 also supports SMS over GPRS

3.14. Real Time Clock and Alarm

The GE864-QUAD AUTOMOTIVE V2 supports the Real Time Clock and Alarm functions through AT commands. An alarm output pin can be configured to indicate the alarm with a hardware line output.

Furthermore the Voltage Output of the RTC power supply is provided so that a backup capacitor can be added externally to increase the RTC autonomy.

3.15. Enhanced Measurement Report

The GE864-QUAD AUTOMOTIVE V2 supports the Enhanced Measurement Report on SACCH channel according to 3GPP TS 44.018 version 4.22.0 Release 4 (par. 3.4.1.2, 9.1.54, 9.1.55) and 3GPP TS 45.008 version 4.17.0 Release 4 (par. 8.4.8).

3.16. Data transmission capabilities

The Telit GE864-QUAD AUTOMOTIVE V2 is a mobile station class B supporting GPRS Class 10, coding schemes 1 to 4 and PBCCH. Moreover, it supports GERAN feature package 1, which consist in supporting the Extended Uplink TBF and Network Assisted Cell Change (NACC).

As for circuit switched data, the GE864-QUAD AUTOMOTIVE V2 supports asynchronous non-transparent data up to 9.6 Kbps. Moreover, it supports the V.110.

3.17. Local security management

The local security management can be done with the lock of Subscriber Identity module (SIM). The security code will be requested at power-up.

3.18. Call control

The call cost control function is supported.

3.19. Phonebook

This function allows the storing of the telephone numbers in SIM memory. The capability depends on SIM version and its embedded memory.

3.20. Characters management

The GE864-QUAD AUTOMOTIVE V2 supports the IRA, GSM, 8859-1 and UCS2 characters sets, in TEXT and PDU mode.



3.21. SIM related functions

Fixed Dialing Numbers (FDN), Abbreviated Dialing Number (ADN) and PIN insertion are supported

Extension at the PIN2 for the PUK2 insertion capability for lock condition is supported too.

3.22. Call status indication

The call status indication is supported.

3.23. Automatic answer (Voice, Data)

The automatic answer is supported. The user/application can specify the number of rings after which the module will automatically answer.

The user/application can set the number of rings by means of the command `ATS0=<n>`.

3.24. Supplementary services (SS)

The following supplementary services are supported:

- Call Barring,
- Call Forwarding,
- Calling Line Identification Presentation (CLIP),
- Calling Line Identification Restriction (CLIR),
- Call Waiting, other party call Waiting Indication,
- Call Hold, other party Hold / Retrieved Indication,
- Closed User Group supplementary service (CUG),
- Advice of Charge,
- Unstructured SS Mobile Originated (MO)

3.25. Acoustic signaling

The acoustic signaling of the GE864-QUAD AUTOMOTIVE V2 on the selected acoustic device are the following:

- Call waiting;
- Ringing tone;
- SMS received tone;
- Busy tone;



- Power on/off tone;
- Off Hook dial tone;
- Congestion tone;
- Connected tone;
- Call dropped;
- No service tone;
- Alarm tone.

3.26. Buzzer output

A general purpose I/O pin can be configured to output the BUZZER output signal. With an external MOSFET or transistor and a diode, a buzzer can be directly driven.

The ringing tone and the other signaling tones can be redirected to this buzzer output with a specific AT command.

3.27. RF Transmission Monitor (RFTXMON)

As alternate function of the GPIO5, the GE864-QUAD AUTOMOTIVE V2 can provide the RF transmission monitor. When the alternate function is activated, the pin of GPIO5 changes to HIGH every time the module transmits an RF signal and remains HIGH for the duration of the transmission sequence, i.e. it does not change with every GSM signal burst.

3.28. RF Transmission Control

As alternate function of the GPIO4 pin, when configured as RF Transmission Control Input, it allows to disable the Transmitter when the GPIO is set to Low by the application.

3.29. TTY (Telephone Text)

The TTY feature is supported. Please refer to 3GPP TS 26.226 and 3GPP TS 26.231 for details.

3.30. Logic level specifications

Where not specifically stated, all the interface circuits work at 2.8V CMOS logic levels. To get more detailed information about the logic level specifications used in the GE864-QUAD AUTOMOTIVE V2, please check with the Hardware User Guide.



3.31. Audio

3.31.1. Analog

The GE864-QUAD AUTOMOTIVE V2 offers one audio line balanced. The GE864-QUAD AUTOMOTIVE V2 has a built-in echo canceller and a noise suppressor. For more details, please refer to the GE864-QUAD AUTOMOTIVE V2 Hardware User Guide.

3.31.2. Digital

The GE864-QUAD AUTOMOTIVE V2 offers the digital voice interface. For more details, please refer to the Digital Voice Interface Application Note.

3.32. Serial Ports

Two serial ports are available on the module:

- Main serial port (full RS232), auto-bauding up to 115,200 bps
- AUX serial port (RX & TX only), 115,200 bps

3.33. Converters

3.33.1. ADC Converter

The GE864-QUAD AUTOMOTIVE V2 has two on board ADC, which are 11-bit converter. They are able to read a voltage level in the range of 0÷2 volts applied on the ADC pin input, store and convert it into 11 bit word.

3.33.2. DAC Converter

The GE864-QUAD AUTOMOTIVE V2 has one on board DAC, which is a 10 bit converter, able to generate an analogue value based a specific input in the range from 0 up to 1023. However, an external low-pass filter is necessary. See the HW User Guide for the details.

3.34. Mounting the GE864-QUAD AUTOMOTIVE V2 on your Board

The Telit GE864-QUAD AUTOMOTIVE V2 module has been designed in order to be compliant with a standard lead-free SMT process. For detailed information about PCB pad design and conditions to use in SMT process please check with the GE864-QUAD AUTOMOTIVE V2 Hardware User Guide.

3.35. Packing system

The Telit GE864-QUAD AUTOMOTIVE V2 is supplied on trays of 50 pieces each or, in Tape&Reel of 250 pcs a reel



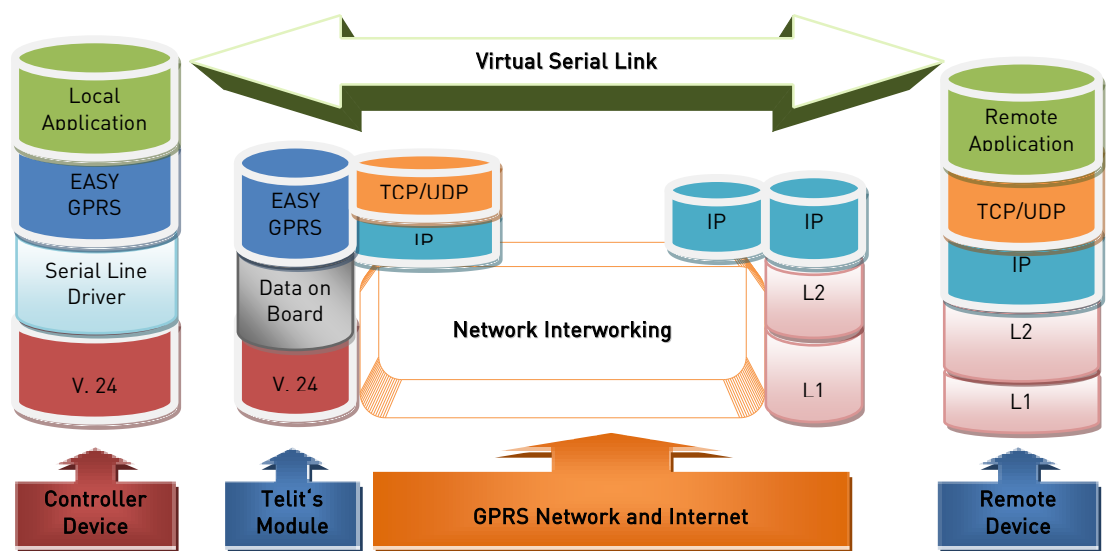
5. Software Features

5.1. Easy GPRS Extension

5.1.1. Overview

The Easy GPRS feature allows the Telit GE864-QUAD AUTOMOTIVE V2 user to contact a device in internet and establish with it a raw data flow over the GPRS and Internet networks.

This feature can be seen as a way to obtain a "virtual" serial connection between the Application Software on the Internet machine involved and the controller of the Telit GE864-QUAD AUTOMOTIVE V2 module, regardless of all the software stacks underlying.



This particular implementation allows to the devices interfacing to the Telit GE864-QUAD AUTOMOTIVE V2 module the use of the GPRS and Internet packet service without the need to have an internal TCP/IP stack since this function is embedded in the module.

For more detailed information regarding the use of the Easy GPRS feature, please consult Easy GPRS User Guide and AT Commands Reference Guide.



5.2. Multisocket

The multisocket is an extension of Telit Easy GPRS feature, which allows the user to have two contexts activated (that means two different IP address), more than one socket connection (with a maximum of 6) and simultaneous FTP client service.

For more detailed information please consult the Easy GPRS User Guide.

5.3. Jamming Detection

5.3.1. Overview

The Jammed Detect feature allows the GE864-QUAD AUTOMOTIVE V2 to detect the presence of a disturbing device such as a Communication Jammer and give indication to the user.

This feature can be very important in alarm, security and safety applications that rely on the module for the communications. In these applications, the presence of a Jammer device can compromise the whole system reliability and functionality and therefore shall be recognized and reported to the local system for countermeasure actions.

5.4. CMUX

CMUX (Converter-Multiplexer) is a multiplexing protocol implemented in the GE864-QUAD AUTOMOTIVE V2 that can be used to send any data, SMS, or TCP data.

5.4.1. Architecture

The Multiplexer mode enables one serial interface to transmit data to four different customer applications. This is achieved by providing four virtual channels using a Multiplexer (MUX).

This is especially advantageous when a data/GPRS call is ongoing. Using the Multiplexer features, e.g. controlling the module or using the SMS service can be done via the additional channels without disturbing the data flow; access to the second UART is not necessary.

Furthermore, several accesses to the module can be created with the Multiplexer. This is of great advantage when several independent electronic devices or interfaces are used.

To access the three virtual interfaces, both the GSM engine and the customer application must contain MUX components, which communicate over the multiplexer protocol.



In Multiplexer mode, AT commands and data are encapsulated into packets. Each packet has channel identification and may vary in length.

5.4.2. Features

- 3GPP 27.010 CMUX Basic Option used
- CMUX implementation support four full DLCI (Serial Port)
- Every CMUX instance has its own user profile storage in NVM
- Independent setting of unsolicited message.
- Every CMUX instance has its own independent flow control



NOTE: More details about the Multiplexer mode are available in the CMUX User Guide.



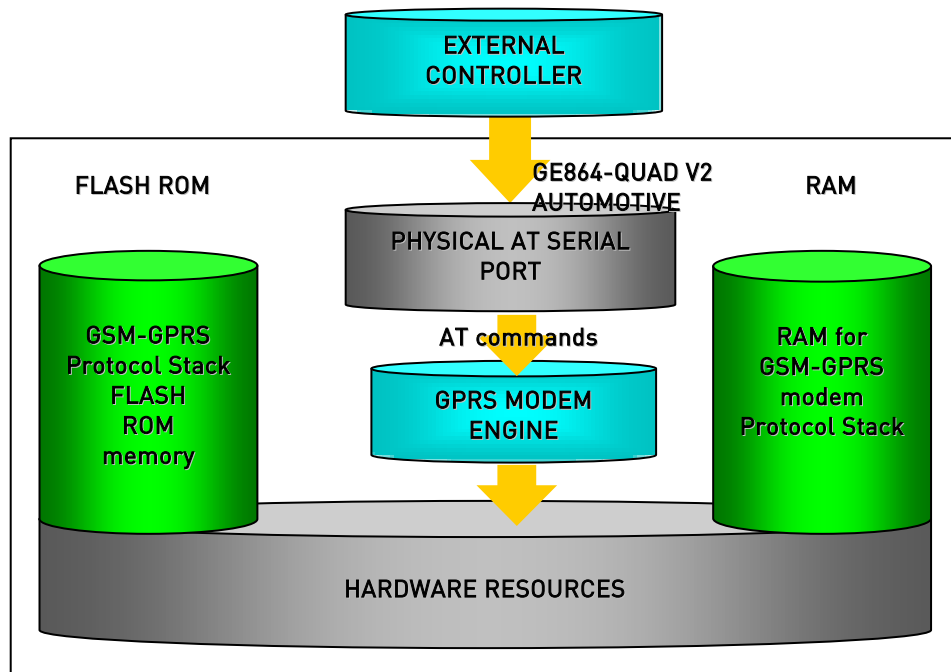
5.5. Easy Script Extension - Python interpreter

5.5.1. Overview

The Easy Script Extension is a feature that allows driving the modem "internally", writing the controlling application directly in a nice high level language: Python.

The Easy Script Extension is aimed at low complexity applications where the application was usually done by a small microcontroller that managed some I/O pins and the GE864-QUAD AUTOMOTIVE V2 through the AT command interface.

A schematic of such a configuration can be:



In order to not use any external controller, and further simplify the programming of the sequence of operations, the customer can benefit of these feature already embedded in the GE864-QUAD AUTOMOTIVE V2:

- Python script interpreter engine v. 1.5.2+
- 1.9 MB of Non Volatile Memory room for the user scripts and data
- 1.2 MB RAM reserved for Python engine usage



5.6. SAP: SIM Access Profile

5.6.1. Architecture

The SAP feature allows the module to use the SIM of a remote SIM Server. This feature is implemented using special AT Command on a Virtual circuit of the CMUX interface.

5.6.2. Implementation features

- SAP is based on 3GPP 27.010 CMUX Basic Option used
- Only SAP Client features
- Logic HW flow control is recommended on the Virtual instance selected for the SAP command.

5.6.3. Remote SIM Message Command Description

The module sends request commands to the client application through a binary message that is crowned in the CMUX message. The client application shall extract the message and send it to the SAP server, through the appropriate protocols (e.g. by RFCOMM, that is the Bluetooth serial port emulation entity).

The client application shall extract all the messages sent by SAP server and put them in the CMUX message, to be sent to the module.

The module fulfills the following feature requirements:

- Connection management
- Transfer APDU
- Transfer ATR
- Power SIM on
- Report Status
- Error Handling



Every feature needs some procedures support:

Feature	Procedure
Connection Management	Connect
	Report Status
	Transfer ATR
	Disconnection Initiated by the Client
	Disconnection Initiated by the Server
Transfer APDU	Transfer APDU
Transfer ATR	Transfer ATR
Power SIM on	Power SIM on
	Transfer ATR
Report Status	Report Status
Error Handling	Error Response

Report Status, Disconnection Initiated by the Server and Error Response are independent messages sent by server. The other procedures consist of couples of messages, started by client.



NOTE: More details about the SAP are available in the SAP User Guide.

5.7. Premium FOTA Management (PFM) Service

The premium FOTA Management Service provides a cost-effective, fast, secure and reliable way for wirelessly reflashing the firmware on mobile devices, ensuring that embedded software is up-to-date with the latest enhancements and features.

Customers, who want to benefit from this service, must pass through the Telit certification program, where Telit will assist the customer in validating the correct implementation of FOTA.

5.7.1. FOTA (Firmware Over The Air)

Telit, which has signed a partnership agreement with the worldwide leader of Firmware OTA technology Red Bend, has integrated its unique vCurrent® Mobile client software for use in its m2m product portfolio. Telit is therefore able to upgrade its products by transmitting only a delta file, which represents the difference between one firmware version and another.

See “PFM Application Note” for details in www.telit.com > Product > GSM/GPRS > Product Family > Application Notes.



5.8. AT Commands

The Telit GE864-QUAD AUTOMOTIVE V2 module can be driven via the serial interface using the standard AT commands .

The Telit GE864-QUAD AUTOMOTIVE V2 module is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. 3GPP 27.007 specific AT command and GPRS specific commands.
3. 3GPP 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

Moreover, the GE864-QUAD AUTOMOTIVE V2 module supports also Telit proprietary AT commands for special purposes.

For a more information about AT commands supported by the GE864-QUAD AUTOMOTIVE V2 module please refer to document AT Commands Reference Guide.



6. Conformity Assessment Issues

The Telit GE864-QUAD AUTOMOTIVE V2 has been assessed in order to satisfy the essential requirements of the R&TTE Directive 1999/05/EC (Radio Equipment & Telecommunications Terminal Equipments) to demonstrate the conformity against the harmonized standards with the final involvement of a Notified Body.

CE 0889

If the module is installed in conformance to the Telit installation manuals, no further evaluation under Article 3.2 of the R&TTE Directive and do not require further involvement of a R&TTE Directive Notified Body for the final product.

In all other cases, or if the manufacturer of the final product is in doubt, then the equipment integrating the radio module must be assessed against Article 3.2 of the R&TTE Directive.

In all cases the assessment of the final product must be made against the Essential requirements of the R&TTE Directive Articles 3.1(a) and (b), Safety and EMC respectively, and any relevant Article 3.3 requirements.

This Product Description, the Hardware User Guide and Software User Guide contain all the information you may need for developing a product meeting the R&TTE Directive.

Furthermore the GE864-QUAD AUTOMOTIVE V2 module is FCC Approved as module to be installed in other devices. This device is to be used only for fixed and mobile applications. If the final product after integration is intended for portable use, a new application and FCC is required.

The GE864-QUAD AUTOMOTIVE V2 is conforming to the following US Directives:

- Use of RF Spectrum. Standards: FCC 47 Part 24 (GSM 1900)
- EMC (Electromagnetic Compatibility). Standards: FCC47 Part 15



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

To meet the FCC's RF exposure rules and regulations:


- The system antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- The system antenna(s) used for this module must not exceed 1.4dBi (850MHz) and 3.0dBi (1900MHz) for mobile and fixed or mobile operating configurations.
- Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Manufacturers of mobile, fixed or portable devices incorporating this module are advised to clarify any regulatory questions and to have their complete product tested and approved for FCC compliance.



6.1. Notified body statement of opinion

NOTIFIED BODY OPINION



NOTIFIED BODY STATEMENT OF OPINION
(For Council Directive 1999/5/EC)

This opinion is issued to

Telit Communications S.p.A.
Via Stazione di Prosecco 5/B
34010 Sgonico (TS)
Italy


to state that the equipment known as

GE865-QUAD and GE864-QUAD V2 Variants

in our opinion, conforms (following an evaluation of its associated Technical Construction File and subject to any restrictions stated in the attached Annex) with the essential requirements of Annex IV of Council Directive 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, in relation to the essential requirements of :

Article 3.2 Radio Spectrum.



Details of the scope of this opinion, standards used, RF parameters of this equipment and other information necessary for the correct interpretation and application, including any remarks, restrictions or observations that are detailed in the attached Annex.

Signed: 

John Bellairs on behalf of RFI Global Services Ltd.

Issue Date: 17 December 2009

Notified Body Opinion No: RFI-NOTA1-SC76506JD02

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CE0889



NOTIFIED BODY STATEMENT OF OPINION

Opinion No: RFI-NOTA1-SC76506JD02

Notified Body Number: 0889

Issue Date: 17 December 2009

ANNEX

SCOPE OF OPINION

Article	✓/*	Applied standard(s) (and version) or reference.
Article 3.1 a (LVD):	*	Not assessed
Article 3.1 a (EMF):	*	Not assessed
Article 3.1 b (EMC)	*	Not assessed
Article 3.2 (Radio Spectrum use)	✓	EN 301 511 V9.0.2 referencing 3GPP TS 51.010-1 V7.9.0 and V8.2.0
Article 3.3 a-f (Special Features)	*	Not applicable

TECHNICAL CONSTRUCTION FILE DETAILS

Title:	Technical Construction File for GE865-QUAD and GE864-QUAD V2 Variants
Reference Number:	TCF76506JD01
Issue Date:	17/12/09
Contact Name:	Mr Fabrizio Druscovich

GENERAL PRODUCT DETAILS

Brand / Trade Name:	Telit
Model Number(s) / Type Designation:	GE865-QUAD, GE864-QUAD V2, GE864-QUAD Automotive V2
Build Version / Revision Level:	1H00 (GE865-QUAD), 0H00 (GE864-QUAD V2, GE864-QUAD Automotive V2)
Software Name and Version:	10.0.2
Operating Frequency	EGSM900 & DCS1800 bands
Declared Output Power (dBm, e.i.r.p or e.r.p)	E-GSM 900:- GSM/GPRS: Class 4 (33 dBm) DCS 1800:- GSM/GPRS: Class 1 (30 dBm)
Additional Information (modulation)	GMSK
Description of Use / Function:	Quad-Band GSM850/EGSM900/DCS1800/PCS1900* GPRS BGA Radio Module *Only the frequency bands allocated to Europe will be used in Europe
Manufacturers Company Name:	Telit Communications S.p.A. (sub-contracted to SEM - Services for Electronic Manufacturing S.r.l., Via Lecco, 61, Vimercate (MI), 20059 Italy)
Manufacturers Address:	Via Stazione di Prosecco 5/B 34010 Sgonico (TS) Italy

PRODUCT VARIANT DETAILS

Details of Product Variant(s) covered by this Notified Body Opinion:	See General Product Details above
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6.3. FCC Certificate

TCB	GRANT OF EQUIPMENT AUTHORIZATION	TCB			
<p>Certification Issued Under the Authority of the Federal Communications Commission By:</p>					
<p>RFI Global Services Ltd Pavilion A Ashwood Park, Ashwood Way Basingstoke, Hampshire, RG23 8BG United Kingdom</p>		<p>Date of Grant: 12/03/2009 Application Dated: 12/03/2009</p>			
<p>Telit Communications S.p.A. Viale Stazione di Prosecco 5/b Trieste, 34010 Italy</p> <p>Attention: Andrea Fragiaco, Ing.</p>					
<p>NOT TRANSFERABLE</p> <p>EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.</p>					
<p>FCC IDENTIFIER: RI7GE864QA2 Name of Grantee: Telit Communications S.p.A. Equipment Class: PCS Licensed Transmitter Notes: Quadband GSM/ GPRS Module Modular Type: Single Modular</p>					
<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	22H	824.2 - 848.8	1.74	27.0 Hz	300KGXW
	24E	1850.2 - 1909.8	0.93	71.0 Hz	300KGXW
<p>Single modular approval. Power Output listed is conducted. This device contains functions that are not operational in U.S. Territories. This filing is only applicable for US operations. The antenna gain, including cable loss, must not exceed 3.0dBi at 1900 MHz / 1.4dBi at 850 MHz as defined in 2.1091 and 1.1307 of the rules for satisfying RF exposure compliance. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures. OEM integrators and end-users must be provided with specific operating instructions for satisfying RF exposure compliance requirements.</p>					



7. SAFETY RECOMMENDATIONS

READ CAREFULLY

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc
- Where there is risk of explosion such as gasoline stations, oil refineries, etc

It is responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity.

We recommend following the instructions of the hardware user guides for a correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conforming to the security and fire prevention regulations.

The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible of the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as of any project or installation issue, because the risk of disturbing the GSM network or external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force.

Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case of this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The European Community provides some Directives for the electronic equipments introduced on the market. All the relevant information's are available on the European Community website:

<http://ec.europa.eu/enterprise/rtte/dir99-5.htm>



The text of the Directive 99/05 regarding telecommunication equipments is available, while the applicable Directives (Low Voltage and EMC) are available at:

http://ec.europa.eu/enterprise/electr_equipment/index_en.htm



