GC864-QUAD-C9 Hardware User Guide

1VV0300811 Rev. 0 – 2009-04-22

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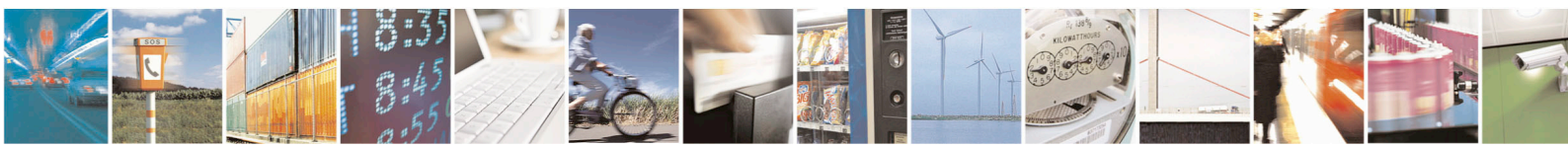

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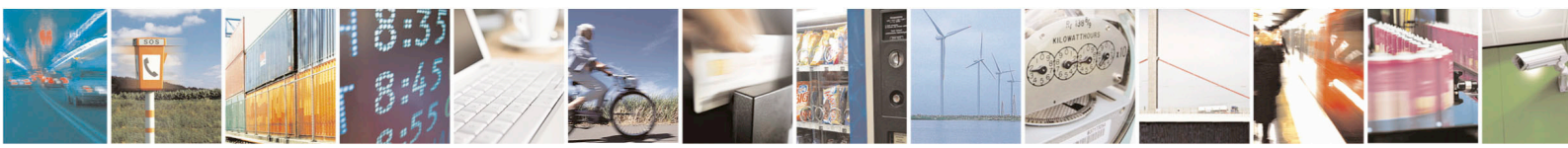

1. Introduction

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1.1. Scope

The scope of this document is to provide a hardware description of the Telit GC864-QUAD-C9 module, which is based on the Telit GE864-QUAD module and, as such, only the added functionalities of the design will be taken into consideration.

1.2. Audience

This document is intended for customers integrating the GC864-QUAD-C9 in their project.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit's 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

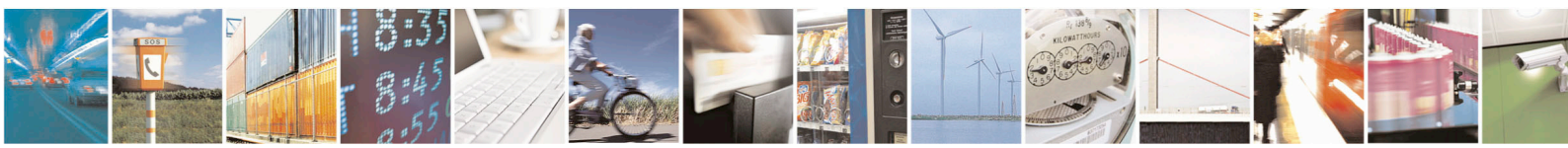
For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

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.

"Chapter 2: "Overview" gives an overview of the features of the product.

"Chapter 3: "System Characteristics" describes in details the characteristics of the product, providing information such as power supply requirements, mechanical dimensions and interfaces specifics.

"Chapter 4: "Mounting the GC864-QUAD-C9" provides some recommendations to follow while mounting the module onto the hosting application.

"Chapter 5: "Conformity Assessment Issues" provides some fundamental hints about the conformity assessment that the final application might need.

"Chapter 6: "Safety Recommendation" provides some safety recommendations that must be followed by the customer in the design of the application that makes use of the GC864-QUAD-C9.

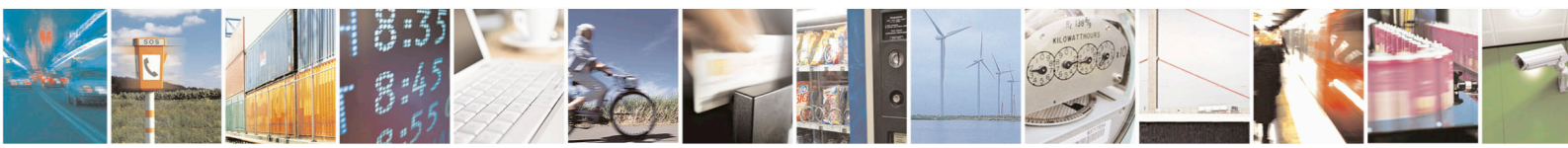
1.5. Text Conventions

Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.

Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

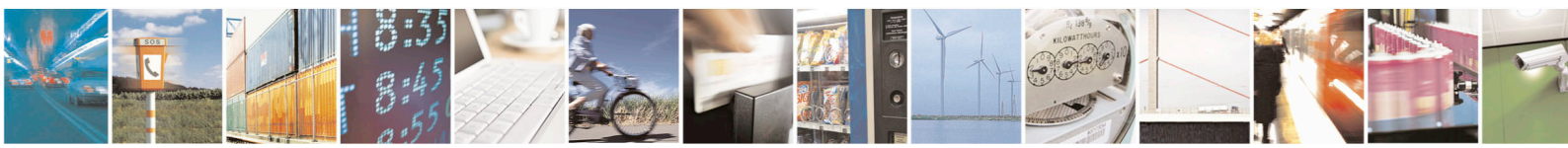


1.6. Related documents

a. GE864 and GC864 Product description, 80273ST10008a
b. GE864 Hardware User Guide, 1vv0300694
c. Telit's GSM/GPRS Family Software User Guide, 1vv0300784
d. AT Commands Reference Guide, 80000ST10025a
e. SIM Holder Design Guides, 80000NT10001a
f. Audio Settings Application Note, 80000NT10007a

1.7. Document History

Revision	Date	Changes	Location
0	2009-04-22	First issue	Trieste



2. Overview

The GC864-QUAD-C9 module has been designed to expand the original functionalities of the GE864-QUAD module, integrating it onto PCB equipment providing an extra ZIF connector interface and extra features described in the following paragraphs.

NOTICE:

The GC864-QUAD-C9 provides the same characteristics of the GE864-QUAD, as far as Quad-Band EGSM 850/900/1800/1900Mhz GSM and GPRS Class 10 technologies support and over the air firmware update by means of Premium FOTA Management.

For further integration details (e.g. SIM Card Connectivity details, Hardware Commands, etc.) that may not be explained in this document, refer to the Telit documentation as specified in the related documents list (paragraph 1.6).

2.1. View of GC864-QUAD-C9

Figure 1 shows the position of pin 1 and pin 40 on the ZIF connector.

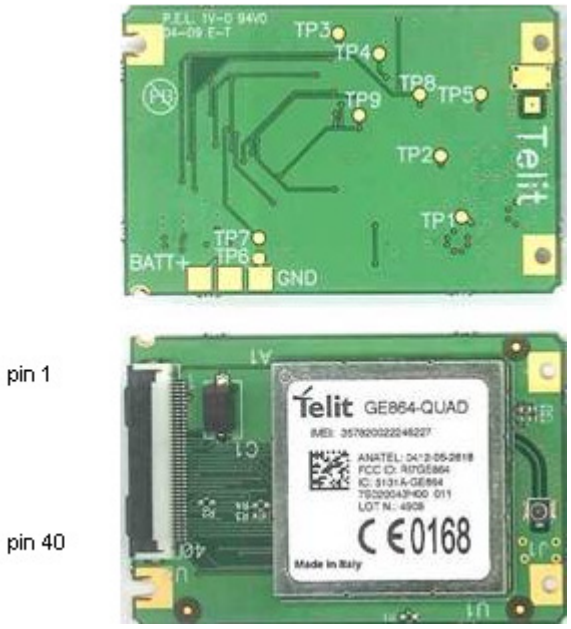


Figure 1

3. System characteristics

3.1. Power Supply Requirements

The power supply circuitry and board layout are a very important part in the full product design and they strongly reflect on the product overall performances.

Latest improvements of the software allow the adoption of the following values:

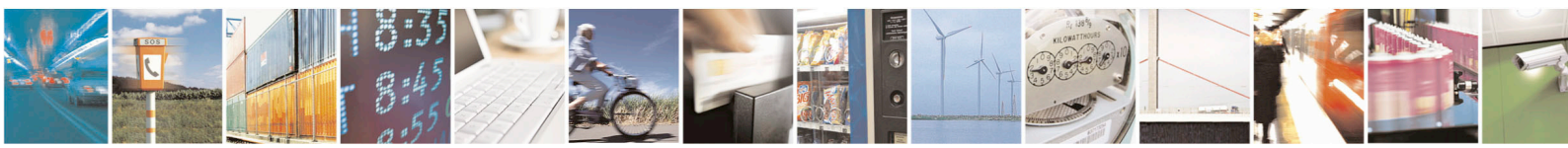
Power Supply	
Nominal Supply Voltage	**3.8 V**
Max Supply Voltage	**4.5 V**
Supply Voltage Range	**3.22 V – 4.5 V**

Table 1

The recommended value of supply voltage is 3.8 V.

NOTICE:

Refer to the GE864-QUAD Hardware user guide (1vv0300694) for further information about power supply requirements and consumptions about this family of Telit modules.



3.2. GC864-QUAD-C9 Mechanical Dimensions

The Telit GC864-QUAD-C9 module overall dimensions are the following:

Length	54,5 mm
Width	36 mm
Thickness	3.7 mm

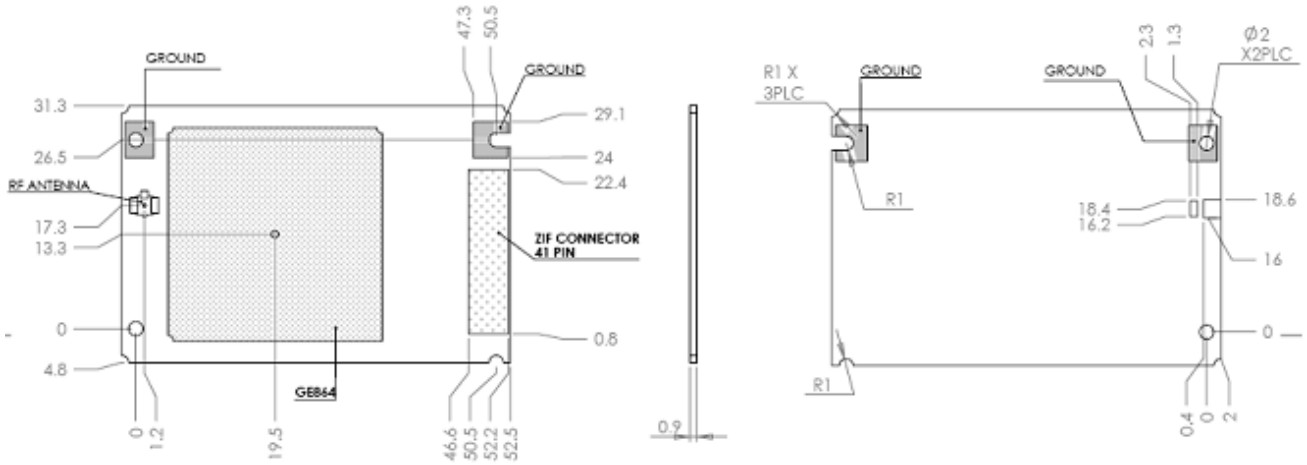
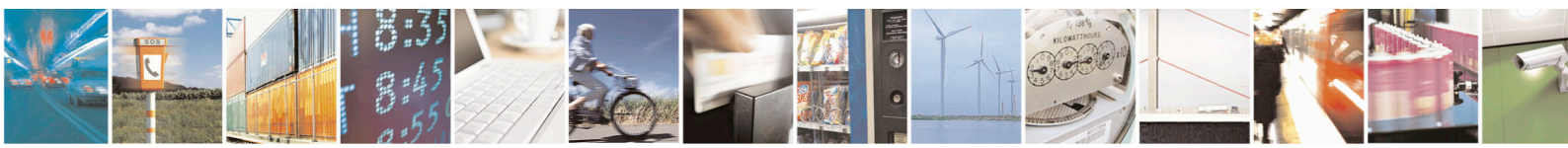


Figure 2



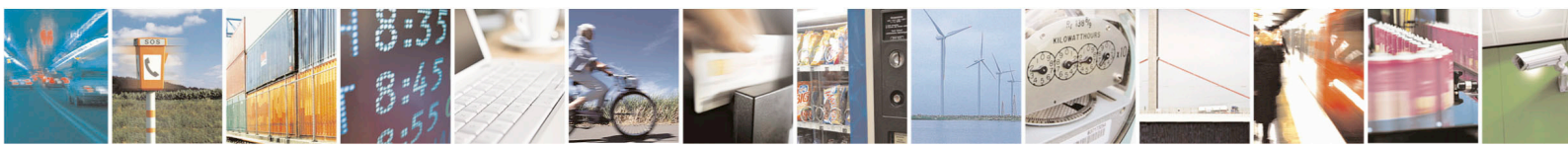
3.3. GC864-QUAD-C9 module connections

3.3.1. ZIF Connector Pin-Out

The following table (table 2) describes the pin-out configuration for the ZIF connector.

Pin Number	Function	In/Out	Pin Number	Function	In/Out
1	**VBATT**	Power	21	**RTS**	In
2	**VBATT**	Power	22	**DTR**	In
3	**VBATT**	Power	23	**DCD**	Out
4	**VBATT**	Power	24	**SIM_IN**	In
5	**VBATT**	Power	25	**SIM-RST**	Out
6	**GND**	Ground	26	**SIM-IO**	In/Out
7	**GND**	Ground	27	**SIM-CLK**	Out
8	**GND**	Ground	28	**SIM-VCC**	Out
9	**GND**	Ground	29	**GND**	Ground
10	**GND**	Ground	30	**VRTC**	In
11	**Not Connected**	Not Connected	31	**RESET**	Input
12	**Not Connected**	Not Connected	32	**STAT-LED**	Out
13	**Vaux**	Out	33	**EAR_MT+**	Analog Output
14	**Not Connected**	Not connected	34	**EAR_MT-**	Analog Output
15	**ON_OFF**	In	35	**EAR_HF+**	Analog Output
16	**DSR**	Out	36	**EAR_HF-**	Analog Output
17	**RI**	Out	37	**MIC_HF+**	Analog input
18	**RXD**	Out	38	**MIC_HF-**	Analog input
19	**TXD**	In	39	**MIC_MT+**	Analog input
20	**CTS**	Out	40	**MIC_MT-**	Analog input

Table 2



3.3.2. STAT LED

The STAT LED pin is used to display information about the network availability and call status. It usually needs and external transistor to drive an external LED, as depicted in the following figure:

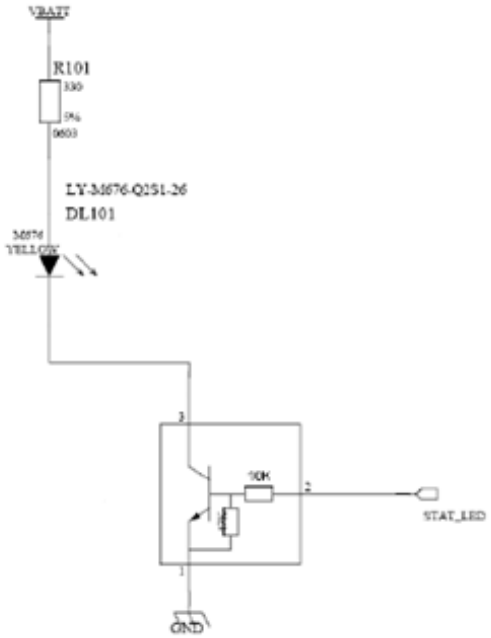


Figure 3

The LED's possible states and associated meanings are described in the following table (table 3):

LED status	Device Status
Permanently off	The device is switched off
Fast blinking (Period 1s, Ton 0,5s)	Net search / Not registered / Turning off
Slow blinking (Period 3s, Ton 0,3s)	Registered full service
Permanently on	A call is active

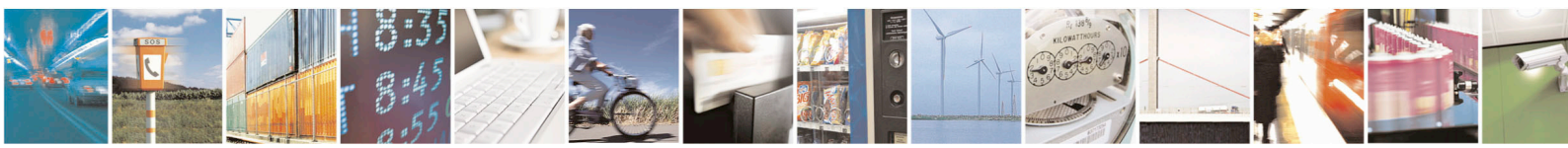
Table 3

3.3.3. VAUX Power Supply

The Vaux power supply is connected on pin 13 in the ZIF Connector.

3.3.3.1. VAUX1 Power Output

Please refer to the GE864 Hardware User Guide (1vv0300694) for details about the VAUX1 power output.



3.4. Connectivity to the ZIF interface

The connection to the ZIF interface can be done via an appropriate 40 contacts flat flex cable.

WARNING:

Be sure that the flex cable fits into the design of the application and that pin 1 and 40 of the cable are connected to the VBATT and MIC_MT- signals respectively.

In this case, use a compatible connector on the application side such as the specified AVX connector (p/n 04-6240-040-001-800+) (Figure 4)

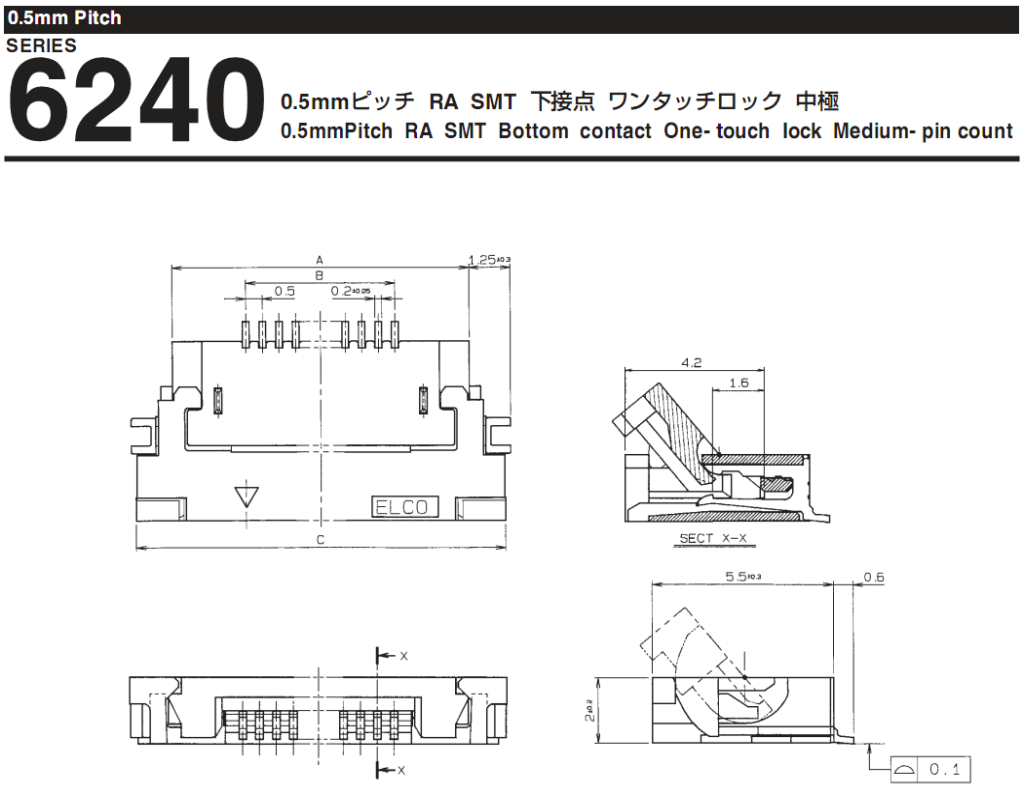


Figure 4

To connect the cable, simply insert it into the open socket without pressing it. Then carefully close the socket lid until the contacts grip.

3.5. Serial Ports

3.5.1. UART connectivity – serial port

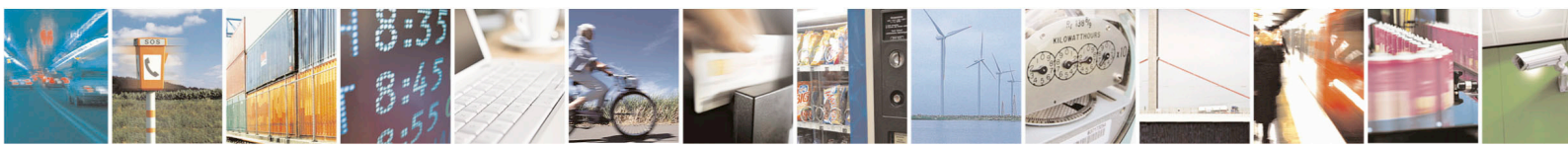
Please refer to the GE864 Hardware User Guide (1vv0300694) for details about UART connectivity.

3.6. Audio section overview

Please refer to the related Audio Settings Application Note (80000NT10007a) for details about the audio hardware setup of this module.

3.7. External SIM Holder implementation

Please refer to the related SIM Holder Design Guide Application Note (80000NT10001a) for details about SIM holder implementation.



4. Mounting the GC864-QUAD-C9

The module has to be firmly attached to the host application in order to work properly and avoid any source of future issues.

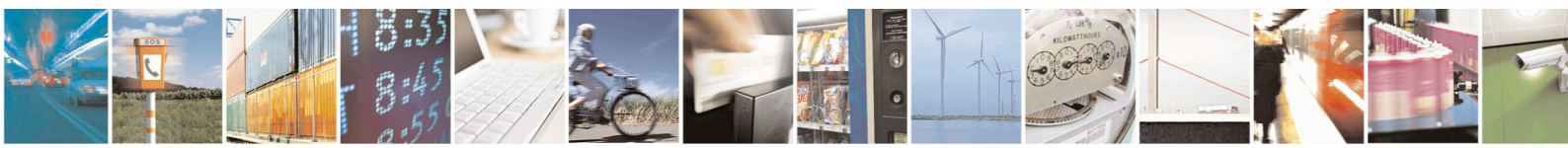
This is granted by the three mounting holes provided by the C9 and the use of M1.6 or M1.8 screws plus suitable washers. The maximum diameter of the screw head including the washer must not exceed 4 mm.

It is recommended to set spacers between the module and the host device if your design approach allows so.

WARNING:

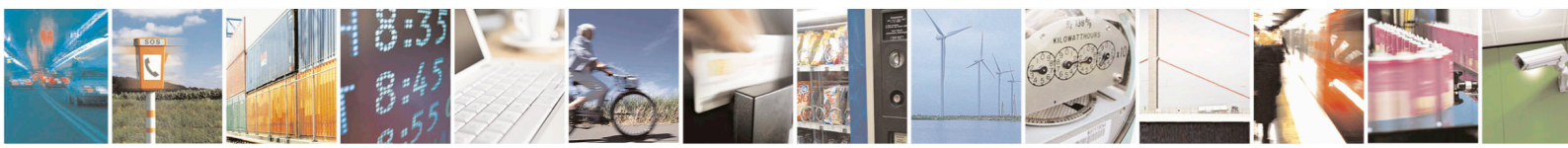
It is mandatory for the host device to provide an opening for the RF equipment. Please refer to the GE864 Hardware User Guide (1vv0300694) for details.

Be careful not to damage the C9 module by forcing it or twisting it or hardly pressing it, especially on the shielding cover. Be sure it is positioned flat against the host device.



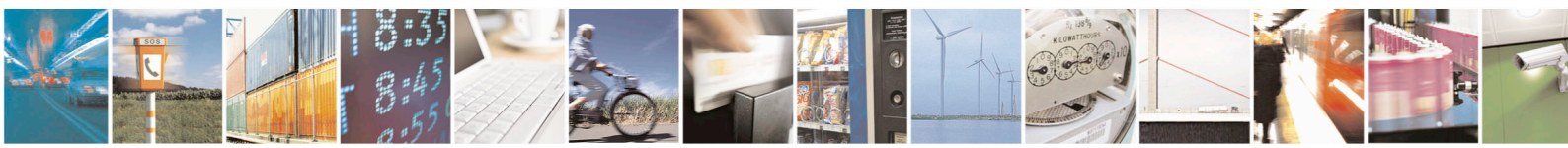
5. Conformity assessment issues

Please refer to the GE864 Product Description (80273ST10008a) for the conformity assessments of this Telit module.



6. Safety recommendations

Please refer to the GE864 Product Description (80273ST10008a) for information about safety recommendations regarding this Telit module.



7. List of acronyms

DSR	Data Set Ready
GPRS	General Radio Packet Service
GSM	Global System for Mobile communication
HF	Hands Free
MT	Mobile Terminated
PCB	Printed Circuit Board
RF	Radio Frequency
RI	Ring Indicator
RTS	Ready To Send
SIM	Subscriber Identity Module
STAT-LED	Status Led
ZIF	Zero Insertion Force