UE866 Product Description

80439ST10671A Rev.2 – 2017-03-01

Making machines talk.

APPLICABILITY TABLE

PRODUCT
UE866-N3G
UE866-EU

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1. Introduction

1.1. Scope

Scope of this document is to give an overview of the Telit UE866 module, which can support WCDMA/HSPA with data/voice capabilities.

1.2. Audience

This document is intended for customers who are evaluating the UE866 product.

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 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. 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.

1.5. Related Documents

- UE866 Hardware User Guide, 1VV0301157
- Telit EVK2 User Guide, 1vv0300704

1.6. Document History

Revision	Date	Changes
0	2014-12-05	First issue
1	2015-04-20	Removed the EU variant; update consumption figures
2	2017-03-01	Updated certificates for new SW release Added new product UE866EU

2. Overview

The UE866 is the smallest module in Telit's 3G portfolio. With its ultra compact 15 x 25 mm LGA footprint, it is designed for applications with severe space constraints. It is a dual band UMTS | HSPA communication product based on the market's latest 3G core which allows integrators to count on availability for even the longest lifecycle applications. It is highly recommended for new designs particularly for deployments where the 2G networks are no longer required. It offers voice and data capabilities and can be easily designed into the application with Telit GNSS modules. Bundle options with Telit GNSS modules for ultra-miniature location-aware connected devices.
As a part of Telit's corporate policy of environmental protection, all Telit products comply with the RoHS (Restriction of Hazardous Substances) directive of the European Union (EU Directive 2011/65/EU)

NOTE:

Some of the performances of the Telit modules depend on S/W version installed on the module itself. The Telit modules S/W group is continuously working in order to add new features and improve the overall performances. The Telit modules are easily upgraded by the developer using the Telit Flash Programmer.

NOTE:

In order to meet the competitive OEM and vertical market stringent requirements, Telit supports its customers with a dedicated Support Policy with:

- Telit Evaluation Kit EVK2 to help you to develop your application;
- A website with all updated information available;
- An high level specialist technical support to assist you in your development;

2.1. Product variants

The following table describes the band combination of the UE866 variants.
The UE866-N3G variant is suitable for the North American market in a dual band 3G-only configuration.

Module	Region	Bands
UE866-N3G	North America	**UMTS** 850/1900 (NA)
UE866-EU	EMEA/APAC	**UMTS** 900/2100 (EU) **GSM** 900/1800 (EU)

2.2. Target Market

The UE866 is designed and developed for applications such as:

- Telematics
- UBI applications
- Fleet management
- Asset tracking
- Wearable devices

2.3. Features

- Advanced WCDMA/HSDPA/HSUPA Software protocol stack (Layer 1 to 3) – Version: 3GPP Release 7
- WCDMA dual-band: B2&B5 for the N3G model
- HSDPA up 7.2Mbps
- HSUPA up to 5.76Mbps
- WCDMA up to 384kbps downlink/uplink
- DTM (Dual Transfer Mode)
- CPC (DRX/DTX) (Continuous Packet Connectivity)
- DARP
- Control via AT commands according to 3GPP TS27.005, 27.007 and Telit customized AT commands
- Serial port multiplexer 3GPP TS27.010
- SIM application Tool Kits 3GPP TS 51.014

- Power consumption (typical values)
  - Stand-by current 3G, DRX7, 1.6 mA
- Output power
  - Class 3 (0.25W) @ 850/900/1900/2100 MHz, WCDMA

Interfaces

- I/O ports including multi-functional I/Os
- I2S for digital audio interface
- USB 2.0 HS
- 2 UART
- 1 SPI
- 1 I2C
- 1.8V/3V SIM interface

Audio

- Telephony, emergency call
- HR, FR, EFR, AMR for GSM and AMR for WCDMA voice codec
- Spatial Noise Suppression
- Multiple audio profiles pre-programmed and fully configurable
- DTMF

SMS

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

Data transmission

- HSPA: category 8 in downlink e category 6 in uplink
  - DL up to 7.2Mbps
  - UL up to 5.76Mbps
- WCDMA: up to 384kbps downlink/uplink
- Asynchronous non-transparent CSD up to 9.6kbps

- GPRS class 10 for NAx variants and class 33 for EUx variants
- EDGE class 10 for NAx variants and class 33 for EUx variants
- Coding scheme 1 to 4 (GPRS) & Modulation Coding scheme 1 to 9 (EDGE)

Additional features

- SIM phonebook
- Fixed Dialling Number (FDN)
- Call control & status indication
- SIM phonebook
- Character management (IRA, UCS2, GSM)
- USIM 3GPP Rel.7
- Real Time Clock
- Automatic answer
- Alarm management
- Embedded TCP/IP stack, including TCP, UDP, SMTP and FTP protocols
- CSD for Video Telephony support

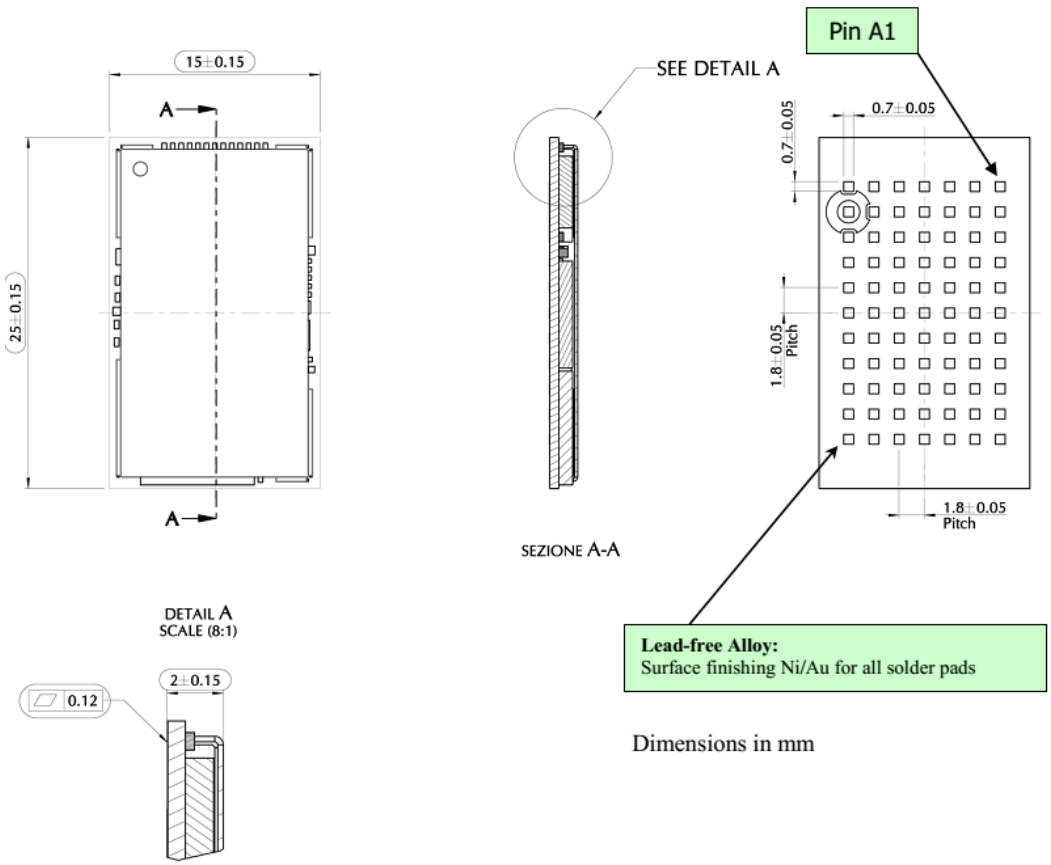
2.4. Approvals

- Fully type approved confirming with R&TTE directive
- CE & GCF
- FCC, IC, PTCRB
- AT&T
- REACH & RoHS

3. General Product Description

3.1. Dimensions and 2D mechanical drawing

UE866 has a LGA package, with 77 pads.



The overall dimensions of UE866 are:

- Length: 25.0 mm
- Width: 15.0 mm
- Thickness: 2.2 mm

3.2. Environmental requirements

3.2.1. Temperature range

Operating Temperature Range	-40°C ~ +85°C

3.2.2. RoHS compliance

As a part of Telit corporate policy of environmental protection, the UE866 complies with the RoHS (Restriction of Hazardous Substances) directive of the European Union (EU directive 2011/65/EU).

3.3. Operating Frequency

The operating frequencies in GSM850, EGSM900, DCS1800, PCS1900, WCDMA modes are compliant to the 3GPP and WCDMA specifications.

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels	TX - RX offset
GSM850	824.2 ~ 848.8	869.2 ~ 893.8	128 ~ 251	45 MHz
EGSM900	890.0 ~ 914.8	935.0 ~ 959.8	0 ~ 124	45 MHz
	880.2 ~ 889.8	925.2 ~ 934.8	975 ~ 1023	45 MHz
DCS1800	1710.2 ~ 1784.8	1805.2 ~ 1879.8	512 ~ 885	95MHz
PCS1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8	512 ~ 810	80MHz
WCDMA850 (band V)	826.4 ~ 846.6	871.4 ~ 891.6	Tx: 4132 ~ 4233 Rx: 4357 ~ 4458	45MHz
WCDMA900 (band VIII)	882.4 ~ 912.6	927.4 ~ 957.6	Tx: 2712 ~ 2863 Rx: 2937 ~ 3088	45MHz
WCDMA1900 (band II)	1852.4 ~ 1907.6	1932.4 ~ 1987.6	Tx: 9262 ~ 9538 Rx: 9662 ~ 9938	80MHz
WCDMA2100 (Band I)	1922.4 ~ 1977.6	2112.4 ~ 2167.6	Tx: 9612 ~ 9888 Rx: 10562 ~ 10838	190MHz

3.4. Transmitter output power

The UE866 transceiver output of GSM/GPRS mode in 850/900MHz bands are class 4 in accordance with the specifications which determine the nominal 2W peak RF power (+33dBm) on 50ohm. In the 1800/1900MHz bands are class 1 in accordance with the specification which determines the nominal 1W peak RF power (+30dBm) on 50ohm.

The UE866 transceiver output of EDGE mode in 850/900MHz bands are class E2 in accordance with the specifications which determine the nominal 0.5W peak RF power (+27dBm) on 50ohm. In the 1800/1900MHz bands are class E2 in accordance with the specification which determine the nominal 0.4W peak RF power (+26dBm) on 50ohm.

The UE866 transceiver output of WCDMA mode in 850/900/1900/2100MHz bands is class 3 in accordance with the specifications which determine the nominal 0.25W peak RF power (+24dBm) on 50ohm.

3.5. Supply voltage

The external power supply must be connected to VBATT & VBATT_PA signals and must fulfill the following requirements:

Nominal Supply Voltage	3.8V
Operating Voltage Range	3.4 ~ 4.2V
Extended Operating Voltage Range	3.1 ~ 4.5V

CAUTION:

The operating voltage MUST not be exceeded; Special care must be taken when designing the application's power supply section to avoid an excessive voltage drop. If the voltage drop is exceeding the limits it could cause a Power Off of the module.

3.6. Power consumption

The UE866 power consumptions are described in the following table

Mode	Average (mA)	Mode Description
AT+CFUN=5	1.6 mA	Disabled TX and RX; DRX7
WCDMA Voice	175	WCDMA voice call (TX = 10dBm)
WCDMA HSDPA (22dBm)	490	WCDMA data call (Cat 8, TX = 22dBm)

3.7. Logic level

Where not specifically stated, the most of interface circuits work at 1.8V CMOS logic levels. To get more detailed information about the logic level specifications used for UE866, please refer to the Hardware User Guide.

3.8. Input and Outputs

3.8.1. General Purpose I/Os

Pins of general purpose I/Os can be configured by AT command in three different ways as input, output and alternative function.

3.8.2. Power on monitor (PWR_MON)

The PWR_MON indicates the status of the module running properly.

3.8.3. Power on/off control (ON_OFF)

External power on/off control input. Refer to the Hardware User Guide for more details of Power on timing.

3.8.4. Auxiliary power output for accessory (VAUX)

A regulated 1.8V power output is provided for an external device.

3.8.5. SIM Reader

The UE866 family supports 1 SIM/USIM at 1.8V and 3V ONLY with and external SIM connector. For 5V SIM, an external level translator can be added. Refer to the UE866 Hardware User Guide.

3.8.6. Converters

The UE866 family has 1 ADC and 1DAC.

3.8.7. Audio Interface

A Digital Audio bus is available.

3.8.8. Serial ports

Two serial ports are available.

- Full RS232-C
- Auxiliary serial port (RX/TX only)

3.8.9. USB port

The USB2.0 High Speed has a clock rate of 480MHz

3.8.10. User Interface

The user interface is managed by AT commands according to ITU-T V.250, 3GPP 27.007 and 27.005 specifications. Please refer to the AT command User Guide for complete details.

3.9. Features

3.9.1. Speech Coding

The UE866 support the following voice codecs:

- Adaptive Multi Rate for WCDMA

3.9.2. SMS

The UE866 supports the following SMS types:

- Mobile Terminated (MT) class 0 ~ 3 with signaling of new incoming SMS, SIM full, SMS read
- Mobile Originated class (MO) 0 ~ 3 with writing, saving in SIM and sending
- Cell broadcast compatible with CB DRX signaling of new incoming SMS.

3.9.3. RTC Bypass out

The VRTC pin brings out the Real Time Clock supply, which is separate from the rest of the digital part, allowing having only RTC going on when all the other parts of the device are off.
To this power output a backup capacitor can be added in order to increase the RTC autonomy during power off of the battery.
NO Devices must be powered from this pin.

3.9.4. Data Transmission capabilities

The UE866 supports:

- HSPA: D/L up to 7.2Mbps, U/L up to 5.76Mbps
- Asynchronous non-transparent CSD up to 9.6kbps for GSM, 14.4kbps for WCDMA
- EDGE Class 10 for NAx variants and Class 33 for EUx variants
- Coding scheme 1 to 4 (GPRS) & Modulation Coding scheme 1 to 9 (EDGE)

3.9.5. Local security management

The local security management can be done with the lock of Universal Subscriber Identity Module (USIM), and the security code will be requested at power-up.

3.9.6. Call control

The calling cost control function is supported.

3.9.7. Phonebook

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

3.9.8. SIM related functions

Activation and deactivation of the numbers stored in phone book FDN (Fixed Dialing Numbers), ADN (Abbreviated Dialing Number) and PIN insertion are supported. Extension at the PIN2 for the PUK2 insertion capability for lock condition is supported too.

3.9.9. Call status indication

The call status indication is supported.

3.9.10. Automatic answer

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

3.9.11. Supplementary services

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)

3.10. Mounting the modules on your board

The modules have 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 refer to the respective Hardware User Guide.

3.11. Packing system

According to SMT process, for picking & placing movement requirements, UE866 is packaged on trays

The level of moisture sensibility of UE866 is "3", according with standard IPC/JEDEC J-STD-020, take care of all the relative requirements for using this kind of components. Special care for handling is highly required.

4. Evaluation Kit

In order to assist the customer in the development of the application, Telit offers the EVK2 Evaluation Kit that can be ordered separately. The EVK2 has a SIM card holder, the RS 232 serial port level translator, a direct UART connection, audio and antenna connector.

The EVK2 provides a fully functional solution for a complete data or phone application. The standard serial RS232 9 pin connector placed on the Evaluation Kit allows the connection of the EVK2 system with a PC or other DTE.

The development of the applications utilizing the Telit UE866 must present a proper design of all the interfaces towards and from the module (e.g. power supply, audio paths, level translators), otherwise a decrease in the performances will be introduced or, in the worst case, a wrong design can even lead to an operating failure of the module.

In order to assist the hardware designer in his project phase, the EVK2 board presents a family of different solutions, which will cover the most common design requirements on the market, and which can be easily integrated in the OEM design as building blocks or can be taken as starting points to develop a specific one.

For a detailed description of the Telit Evaluation Kit, please refer to the documentation provided with the respective Hardware User Guide and EVK2 User Manual.

5. AT Commands

The UE866 can be driven via the serial and USB interface using the standard AT commands.

The modules are compliant with:

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

Moreover, the modules support also Telit proprietary AT commands for special purposes.

For more information about the AT commands supported by the modules, please refer to the AT Commands Reference Guide.

6. 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 WCDMA/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/sectors/rtte/documents/

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/sectors/electrical/

7. Conformity assessment issues

Telit

EU DECLARATION OF CONFORMITY

1 **UE866-EU** (product name)

2 Telit Communications S.p.A., Via Stazione di Prosecco, 5/b - 34010 Sgonico – TRIESTE – ITALY (manufacturer)

3 This declaration of conformity is issued under the sole responsibility of the manufacturer

4 Dual Band EGSM900/DCS1800 GSM/GPRS and Dual Band WCDMA FDD I / FDD VIII wireless module

5 The object of the declaration described above is in conformity with the relevant Community harmonisation: European Directive 1999/5/EC (R&TTE)

6 The conformity with the essential requirements of the 1999/5/EC has been demonstrated against the following harmonized standards:

Harmonized Standard reference	Article of Directive 1999/5/EC
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013 EN 62311:2008	3.1 (a): Health and Safety of the User
EN 301 489-1 V1.9.2 EN 301 489-7 V1.3.1 EN 301 489-24 V1.5.1	3.1 (b): Electromagnetic Compatibility
EN 301 511 V12.1.1 EN 301 908-1 V7.1.1 EN 301 908-2 V6.2.1	3.2 : Effective use of spectrum allocated

7 The conformity assessment procedure referred to in Article 10 and detailed in Annex IV of Directive 1999/5/EC has been followed with the involvement of the following Notified Body:
AT4 wireless, S.A., Parque Tecnológico de Andalucía, C/ Severo Ochoa 2, 29590 Campanillas – Málaga – SPAIN, Notified Body No: 1909

Thus, CE 1909 is placed on the product

8 The Technical Construction File (TCF) relevant to the product described above and which supports this Declaration of Conformity, is held at: Telit Communications S.p.A., Via Stazione di Prosecco, 5/b - 34010 Sgonico – TRIESTE – ITALY

Signed for and on behalf of Telit Communications S.p.A

Trieste, **2016-12-05**

Quality Director
Guido Walcher

Quality Manager
Cesare Robelli

Notified Body No.: 50108.006

Technical Construction File: UE866-EU_HW0_50108_Rev1

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Nr. R.E.A. TS-120027

Società soggetta all'attività
di direzione e coordinamento
da parte di Telit Communications PLC
con sede in Londra (art.2497 bis C.C.)

Società con socio unico
(Telit Communications PLC)

Mod 0236 2016-05 Rev.1 This declaration is issued according to 768/2008/EC

EU DECLARATION OF CONFORMITY

1 **UE866-EU** (product name)

2 Telit Communications S.p.A., Via Stazione di Prosecco, 5/b - 34010 Sgonico – TRIESTE – ITALY (manufacturer)

3 This declaration of conformity is issued under the sole responsibility of the manufacturer

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EN 301 511 V12.1.1 EN 301 908-1 V7.1.1 EN 301 908-2 V6.2.1	3.2 : Effective use of spectrum allocated

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AT4 wireless, S.A., Parque Tecnológico de Andalucía, C/ Severo Ochoa 2, 29590 Campanillas – Málaga – SPAIN, Notified Body No: 1909

Thus, CE 1909 is placed on the product

8 The Technical Construction File (TCF) relevant to the product described above and which supports this Declaration of Conformity, is held at: Telit Communications S.p.A., Via Stazione di Prosecco, 5/b - 34010 Sgonico – TRIESTE – ITALY

Signed for and on behalf of Telit Communications S.p.A

Trieste, **2016-12-05**

Quality Director
Guido Walcher

Quality Manager
Cesare Robelli

Notified Body No.: 50108.005

Technical Construction File: UE866-EU_HW1_50108_Rev1

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di direzione e coordinamento
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con sede in Londra (art.2497 bis C.C.)

Società con socio unico
(Telit Communications PLC)

Mod 0236 2016-05 Rev.1 This declaration is issued according to 768/2008/EC

7.1. RTT&E Notified Body statement of Opinion

AT4 wireless, S.A.U.

Designated by the

Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información
(Ministerio de Industria, Energía y Turismo)

to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 9 March 1999

Directive 1999/5/EC – Notified Body Expert Opinion

Identification Number: 50108CNB.006
Issue date: 2016-12-05

APPLICANT DETAILS:

Company name: Telit Communications S.p.A.
Address: Via Stazione di Prosecco, 5/b
34010 Sgonico [TS]
Italy

MANUFACTURER DETAILS:

Company name: Telit Communications S.p.A.
Address: Via Stazione di Prosecco, 5/b
34010 Sgonico [TS]
Italy

EQUIPMENT DETAILS:

Type of equipment: 2G/3G module
Brand name: Telit
Model name: UE866-EU
HW versions: 0
SW versions: 12.00.827 // 12.00.828

SCOPE OF OPINION:

Essential requirements	Specifications / Standards	Submitted documents
Article 3.1(a): Electrical safety	EN 60950-1:2006 +A11:2009+ A12:2011 + A1:2010 + AC:2011 + A2: 2013	Test report
Article 3.1(a): EMF exposure	EN 62311:2008	Calculation
Article 3.1(b): EMC	EN 301 489-1 V1.9.2 EN 301 489-7 V1.3.1 EN 301 489-24 V1.5.1	Test report
Article 3.2: Radio spectrum use	EN 301 511 V12.1.1 EN 301 908-1 V7.1.1 EN 301 908-2 V6.2.1	Test report

OPINION:

Our opinion in accordance with Annex IV of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity is that the equipment complies with the requirements of that directive stated in the above scope.

This opinion has 1 annex with 1 pages and it is only valid in conjunction with it.

Signed on behalf of AT4 wireless, S.A.U. in Málaga (Spain)

Digitally signed by RICARDO OREJAS RODRÍGUEZ
DN: cn=RICARDO OREJAS RODRÍGUEZ, emailAddress=roreijas@at4wireless.com, serialNumber=32046566E, cn=OREJAS RODRÍGUEZ, givenName=RICARDO, 1.3.6.1.4.1.17326.30.3=A29507456, o=AT4 WIRELESS S.A.U., ou=LABORATORIOS, title=RESPONSABLE ORGANISMO NOTIFICADO, 2.5.4.97=VATES-A29507456
Date: 2016.12.05 18:54:04 +01'00'

Name: Ricardo Orejas
Position: Responsible of 1999/5/EC Dir. NB No. 1909

Marking: **The product shall be marked with CE and our notified body number as shown below.**

CE 1909

FDT46_02 // AT4 wireless, S.A.U., Parque Tecnológico de Andalucía, C/Severo Ochoa 2, 29590 Campanillas (Málaga), Spain // http://www.at4wireless.com

AT4 wireless, S.A.U.

Designated by the

Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información
(Ministerio de Industria, Energía y Turismo)

to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 9 March 1999

Directive 1999/5/EC – Notified Body Expert Opinion

Identification Number: 50108CNB.005
Issue date: 2016-12-05

APPLICANT DETAILS:

Company name: Telit Communications S.p.A.
Address: Via Stazione di Prosecco, 5/b
34010 Sgonico [TS]
Italy

MANUFACTURER DETAILS:

Company name: Telit Communications S.p.A.
Address: Via Stazione di Prosecco, 5/b
34010 Sgonico [TS]
Italy

EQUIPMENT DETAILS:

Type of equipment: 2G/3G module
Brand name: Telit
Model name: UE866-EU
HW versions: 1
SW versions: 12.00.837 // 12.00.838

SCOPE OF OPINION:

Essential requirements	Specifications / Standards	Submitted documents
Article 3.1(a): Electrical safety	EN 60950-1:2006 +A11:2009+ A12:2011 + A1:2010 + AC:2011 + A2: 2013	Test report
Article 3.1(a): EMF exposure	EN 62311:2008	Test report
Article 3.1(b): EMC	EN 301 489-1 V1.9.2 EN 301 489-7 V1.3.1 EN 301 489-24 V1.5.1	Test report
Article 3.2: Radio spectrum use	EN 301 511 V12.1.1 EN 301 908-1 V7.1.1 EN 301 908-2 V6.2.1	Test report

OPINION:

Our opinion in accordance with Annex IV of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity is that the equipment complies with the requirements of that directive stated in the above scope.

This opinion has 1 annex with 2 pages and it is only valid in conjunction with it.

Signed on behalf of AT4 wireless, S.A.U. in Málaga (Spain)

Digitally signed by RICARDO OREJAS RODRÍGUEZ
Date: 2016.12.05 18:52:43 +01'00'

Name: Ricardo Orejas
Position: Responsible of 1999/5/EC Dir. NB No. 1909

Marking: **The product shall be marked with CE and our notified body number as shown below.**

CE 1909

FDT46_02 // AT4 wireless, S.A.U., Parque Tecnológico de Andalucía, C/Severo Ochoa 2, 29590 Campanillas (Málaga), Spain // http://www.at4wireless.com

7.2. FCC certificate

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification

Issued Under the Authority of the

Federal Communications Commission

By:

TCB

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6-10
66117 Saarbruecken,
Germany

Date of Grant: 05/06/2015

Application Dated: 05/06/2015

Telit Communications S.p.A.
Viale Stazione di Prosecco 5/b
Trieste, 34010
Italy

Attention: Brian Tucker , Global VP, Quality

NOT TRANSFERABLE

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.

FCC IDENTIFIER: RI7UE866N3
Name of Grantee: Telit Communications S.p.A.
Equipment Class: PCS Licensed Transmitter
Notes: 3G Module

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	22H	826.4 - 846.6	0.17	2.49 PM	4M63F9W
	24E	1852.4 - 1907.6	0.17	1.2 PM	4M07F9W

Output power 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(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 operated in conjunction with any antenna or transmitter, except in accordance with FCC multi- transmitter product procedures. Grantee must provide installation and operating instructions for complying with FCC multi-transmitter product procedures.

This device is to be used in mobile or fixed applications only. For mobile and fixed operating configurations, as specified in this filing, the antenna gain, including cable loss, must not exceed 7.76 dBd at 850 MHz, 9.01dBi at 1900 MHz for satisfying RF exposure compliance. Under no conditions may an antenna gain be used that would exceed the ERP and EIRP power limits as specified in Part 22H, 24E.

The final product operating with this transmitter must include operating instructions and antenna installation instructions, for end-users and installers to satisfy RF exposure compliance requirements. OEM integrators must insure that the end user has no manual instructions to remove or install this module. The Grantee is responsible for providing the documentation required for modular use

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

TCB

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6-10
66117 Saarbruecken,
Germany

Date of Grant: 05/27/2015

Application Dated: 05/27/2015

Telit Communications S.p.A.
Viale Stazione di Prosecco 5/b
Trieste, 34010
Italy

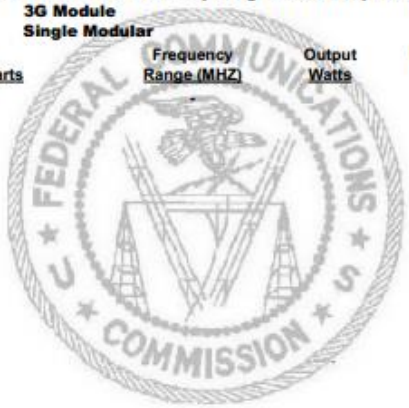
Attention: Brian Tucker , Global VP, Quality

NOT TRANSFERABLE

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.

FCC IDENTIFIER:	RI7UE866N3
Name of Grantee:	Telit Communications S.p.A.
Equipment Class:	**Part 15 Class B Computing Device Peripheral**
Notes:	**3G Module**
Modular Type:	**Single Modular**

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	15B				



7.3. IC certificates

TECHNICAL ACCEPTANCE CERTIFICATE Canada

CETECOM

CETECOM ICT Services GmbH
CAB identification Nr. DE0001
authorized by the German Government to act as CAB (Conformity Assessment Body) in accordance with the MRA EU Canada of 1st November 1998.

Bundesnetzagentur
BNetzA-CAB-03/23-01

Certificate Holder	Telit Communications S.p.A Via Stazione Di Prosecco 5/B 34010 Sgonico, Trieste Germany
IC Certification Number	5131A-UE866N3
Product Description	3G Module
CETECOM Registration No.	1-9811/15-1-2
OATS Facility	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Phone: +49 2054 9519-954 Fax: +49 2054 9519-964 Email: info@cetecom.com
OATS Facility ID	3462D-2

Certification of equipment means only that the equipment has met the requirements of the above-noted specification. License applications, where applicable to use certified equipment, are acted on accordingly by the Industry Canada issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by Industry Canada. The equipment for which this certificate is issued shall not be manufactured, imported, distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by Industry Canada.

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'Industrie Canada et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'Industrie Canada. Le matériel à l'égard duquel le présent certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicables publiées par Industrie Canada.

I hereby attest that the subject equipment was tested and found in compliance with the above-noted specification.
J'atteste par la présente que le matériel a fait l'objet d'essais et jugé conforme à la spécification ci-dessus.

Place, date of issue

Essen

CETECOM ICT Services GmbH

FOREIGN CERTIFICATION BODY

Francis Lima / TCB

CETECOM ICT Services GmbH - Untertürkheimer Str. 6-10
D E 66117 Saarbrücken - TCB@cetecom.com - www.cetecom.com

This certificate becomes valid when published in REL at :
Le présent certificat entre en vigueur qu'après être publié en REL sur :
https://sms-sgs.ic.gc.ca/equipmentSearch/searchRadioEquipment.s

8. List of acronyms

3GPP	3rd Generation Partnership Project
ADC	Analog to Digital Converter
ADN	Abbreviated Dialing Number
A-GPS	Assisted GPS
AMR	Adaptive Multi Rate
AT	Attention Commands
AWS	Advanced Wireless Services
BER	Bit Error Rate
BGA	Ball Grid Array
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CMOS	Complementary Metal-Oxide Semiconductor
CSD	Circuit Switched Data
DAC	Digital to Analog Converter
DARP	Downlink Advanced Receiver Performance
DTMF	Dual Tone Multi Frequency
FDN	Fixed Dialing Number
FTP	File Transfer Protocol
GSM	Global System for Mobile communication
GPRS	General Packet Radio Service
GPS	Global Positioning System
HSPA	High Speed Packet Access
HSUPA	High Speed Uplink Packet Access
H/W	Hardware
LED	Light Emitting Diode
MO	Mobile Originated
MT	Mobile Terminated

OEM	Other Equipment Manufacturer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PDA	Personal Digital Assistant
PDU	Protocol Data Unit
PIN	Personal Identification Number
POS	Point Of Sales
PWM	Pulse Width Modulation
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
RTC	Real Time Clock
SAIC	Single Antenna Interface Cancellation
SIM	Subscriber Identity Module
SMD	Surface Mounted Device
SMS	Short Message Service
S/W	Software
TBD	To Be Determined
TCP/IP	Transmission Control Protocol/Internet Protocol
TTSC	Telit Technical Support Center
UART	Universal Asynchronous Receiver and Transmitter
USB	Universal Serial Bus
USIM	Universal Subscriber Identity Module
WCDMA	Wideband Code Division Multiple Access