

# Regulatory and Other Notes

HID Addendum

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# 1 Preamble

This HID Addendum assembles latest regulatory and other notes that apply to the Gemalto M2M Cinterion® modules listed in Section 1.1. The assembled notes replace or extend information mentioned in available Hardware Interface Descriptions (=HIDs) for a specific product.

The updated regulatory notes are given in Chapter 2, whereas the other information is described in Chapter 3.

## 1.1 Affected Products

This HID Addendum refers to the HIDs for the following Gemalto M2M Cinterion® modules:

AUTOMOTIVE	INDUSTRIAL	INDUSTRIAL PLUS	Other families/Terminals
ALS1-E/-US	BGS2-W/-E/-E8	PDS5	MC55i-W
ALS3-E/-US/-C	BGS5	PDS6	MC37iR3
AHS2-E	BGS8	PDS8	MC52iR3
AHS3-W/-US	EHS5-E/-E8	PLS8-E/-US/-X	BG2-W/-E
AGS2-W	EHS6/-A	PHS8-E/-P/-J/-K	PH8/PH8-P/-J/-K
AGS2-E	EHS8	PXS8	AC65i/AC75i
AH3-W/-US	ELS61-E/-AUS		BGS3
ALAS3-W	BGS1-E		EES3/EGS3/EGS5/EGS5-X
AGS3			MC75i/TC63i/TC65i/TC65i-X
			BGS2 (Terminal)
			EHSx/BGS5 (Terminal)

Please **note** that quite a number of HIDs available for the more current product versions may already contain the latest regulatory and other information.

## 1.2 Related Documents

- [1] Hardware Interface Description for your appropriate Gemalto product
- [2] AN48: SMT Module Integration for your appropriate Gemalto SMT product

To visit the Gemalto M2M Website you can use the following link:

<http://m2m.gemalto.com/>

## 2 Regulatory Notes

As a result of the introduction of the Radio Equipment Directive (RED), and in combination with repealing the Radio Equipment and Telecommunications Terminal Equipment directive (R&TTE), the regulatory and type approval information in quite a number of product HIDs needs to be revised. See Section 1.1 for the affected HIDs.

For the regulatory and type approval information that is affected by this replacement, the following table lists and matches the previous (R&TTE based) with the latest (RED based) directives and standards.

Please note that not all of the directives and standards listed in the below table apply to every product and their HID. Therefore, if a mentioned R&TTE based directive or standards cannot be found in the HID at hand, it need not be replaced by any newer RED based version.

R&TTE based directives and standards →	RED based directives and standards
<b>Directives</b>	
1999/5/EC (R&TTE):  Directive 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	2014/53/EU (RED):  Directive of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC  Applicable as of 13 June 2016.  According to Article 48 of the Directive 2014/53/EU, a transitional period between Directive 1999/5/EC and Directive 2014/53/EU has been granted, making Directive 1999/5/EC applicable at the choice of the economic operator until 12 June 2017.
ECE-R 10:  Economic Commission for Europe (ECE) Regulation No. 10: Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility	Generally no longer required (in parallel with RED updates).
2002/95/EC (RoHS 1):  Directive of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)	2002/95/EC (RoHS 1) 2011/65/EC (RoHS 2):  Directive of the European Parliament and of the Council of 27 January 2003 ((and revised on 8 June 2011) on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
<b>Standards of European type approval</b>	
EN 300 440-02 V1.4.1 (or earlier):  Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive	ETSI EN 300 440 V2.1.1:  Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU

R&TTE based directives and standards →	RED based directives and standards
<p>ETSI EN 301 511 V9.0.2 (or earlier):</p> <p>Candidate Harmonized European Standard (Telecommunications series) Global System for Mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands covering essential requirements under article 3.2 of the R&amp;TTE directive (1999/5/EC) (GSM 13.11 version 7.0.1 Release 1998)</p>	<p>ETSI EN 301 511 V12.5.1:</p> <p>Global System for Mobile communications (GSM); Mobile Stations (MS) equipment; Harmonized Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU</p>
<p>ETSI EN 301 489-01 V1.9.2 (or earlier):</p> <p>Electromagnetic Compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common Technical Requirements</p>	<p>ETSI EN 301 489-01 V2.1.1:</p> <p>Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU</p>
<p>ETSI EN 301 489-03 V1.6.1 (or earlier):</p> <p>Electromagnetic Compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Specific requirements for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 25 GHz</p>	<p>ETSI EN 301 489-3 V2.1.0:</p> <p>Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU</p>
<p>ETSI EN 301 489-07 V1.3.1 (or earlier):</p> <p>Electromagnetic Compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)</p>	<p>ETSI EN 301 489-52 V1.1.0:</p> <p>Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU</p>
<p>ETSI EN 301 489-24 V1.5.1 (or earlier):</p> <p>Electromagnetic Compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment</p>	
<p>ETSI EN 301 908-01 V7.0.1 (or earlier):</p> <p>Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements of article 3.2 of the R&amp;TTE Directive</p>	<p>ETSI EN 301 908-01 V11.1.1:</p> <p>IMT cellular networks; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Introduction and common requirements</p>

R&TTE based directives and standards →	RED based directives and standards
<p>ETSI EN 301 908-02 V6.2.1 (or earlier):</p> <p>Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third Generation cellular networks; Part 2: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&amp;TTE Directive</p>	<p>ETSI EN 301 908-02 V11.1.1:</p> <p>IMT cellular networks; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)</p>
<p>EN 301 908-13 V5.2.1 (or earlier):</p> <p>IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&amp;TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)</p>	<p>ETSI EN 301 908-13 V11.1.1:</p> <p>IMT cellular networks; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)</p>
<p>EN 62311:2008:</p> <p>Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)</p>	<p>Now mentioned in separate HID section describing SAR requirements specific to portable mobiles.</p>
<p>EN 60950-1:2006/ A11:2009+A1:2010+A12:2011 (or earlier):</p> <p>Safety of information technology equipment</p>	<p>EN 60950-1:2006/ A11:2009+A1:2010+A12:2011+A2:2013:</p> <p>Safety of information technology equipment</p>



### 3 Other Notes

Besides the above regulatory information there are two other notes that extend the HID's for the Gemalto M2M Cinterion<sup>®</sup> modules as listed in Section 1.1:

- In the HID "Appendix", the following footnote should be added to the module label number mentioned in the "Parts and Accessories" table:  
"Note: At the discretion of Gemalto M2M, module label information can either be laser engraved on the module's shielding or be printed on a label adhered to the module's shielding."
- In the HID section "Soldering Conditions and Temperature" the sub-sections "Reflow Profile" (in Table 1) as well as "Maximum Temperature and Duration" (in last bullet) need to be revised as shown below. Note that this update applies only to AUTOMOTIVE and INDUSTRIAL PLUS SMT modules:

#### Reflow Profile

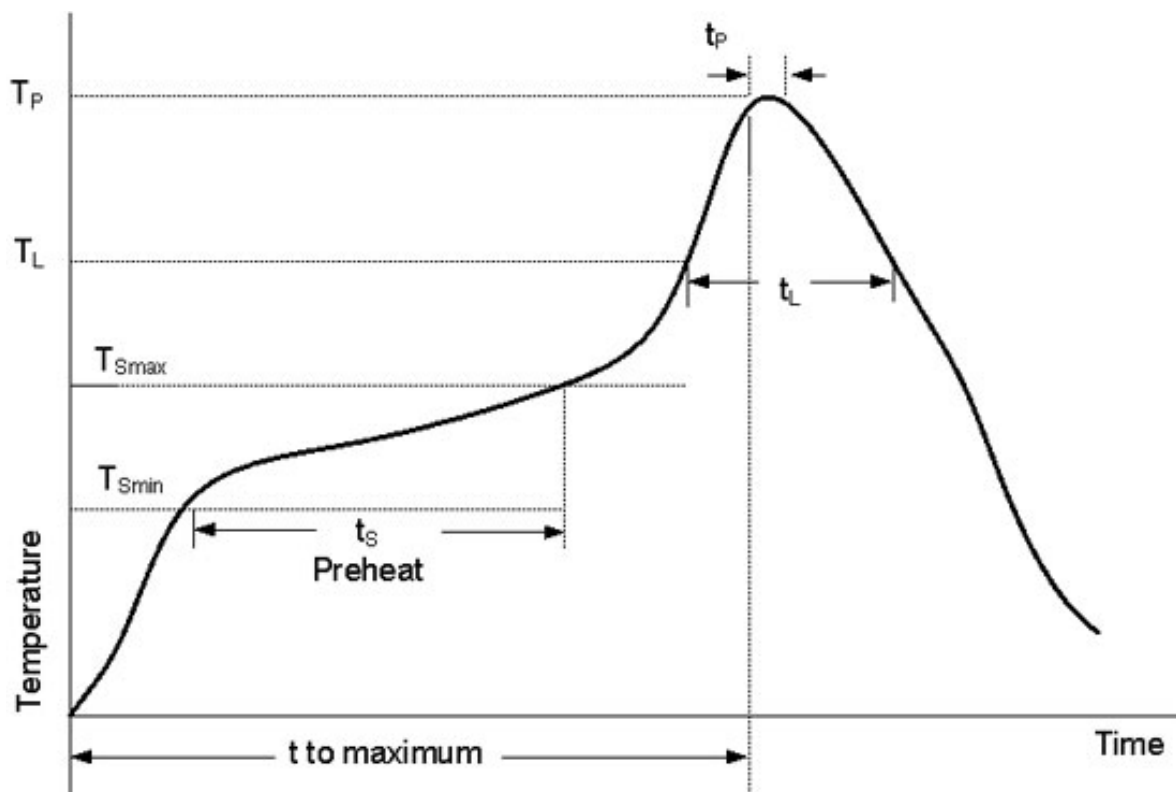


Figure 1: Reflow Profile

Table 1: Reflow temperature recommendations<sup>1</sup>

Profile Feature	Pb-Free Assembly
Preheat & Soak	
Temperature Minimum ( $T_{Smin}$ )	150°C
Temperature Maximum ( $T_{Smax}$ )	200°C
Time ( $t_{Smin}$ to $t_{Smax}$ ) ( $t_s$ )	60-120 seconds
Average ramp up rate ( $T_L$ to $T_P$ )	3K/second max. <sup>2</sup>
Liquidous temperature ( $T_L$ )	217°C
Time at liquidous ( $t_L$ )	60-90 seconds
Peak package body temperature ( $T_P$ )	245°C +0/-5°C
Time ( $t_P$ ) within 5 °C of the peak package body temperature ( $T_P$ )	30 seconds max.
Average ramp-down rate	6K/second max. <sup>2</sup>
- Limited ramp-down rate between 225°C and 200°C	3K/second max. <sup>2</sup>
Time 25°C to maximum temperature	8 minutes max.

### Maximum Temperature and Duration

The following limits are recommended for the SMT board-level soldering process to attach the module:

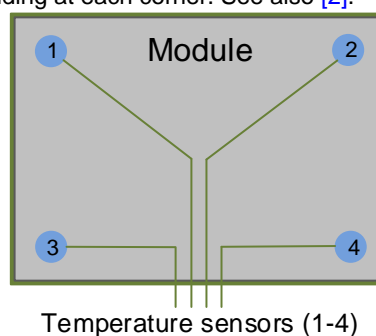
- A maximum module temperature of 245°C. This specifies the temperature as measured at the module's top side.
- A maximum duration of 30 seconds at this temperature.
- Ramp-down rate from TP to 200°C should be controlled in order to reduce thermally induced stress during the solder solidification phase (see Table 1 - limited ramp-down rate). Therefore, a cool-down step in the oven's temperature program between 200°C and 180°C should be considered. For more information on reflow profiles and their optimization see [2].

Please note that while the solder paste manufacturers' recommendations for best temperature and duration for solder reflow should generally be followed, the limits listed above must not be exceeded.

The module is specified for one soldering cycle only. Once the module is removed from the application, it will very likely be destroyed and cannot be soldered onto another application.

<sup>1</sup> Please note that the listed reflow profile features and ratings are based on the joint industry standard IPC/JEDEC J-STD-020D.1, and are as such meant as a general guideline. For more information on reflow profiles and their optimization please refer to [2].

<sup>2</sup>Temperatures measured on shielding at each corner. See also [2].



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Our solutions are at the heart of modern life, from payment to enterprise security and the Internet of Things. We authenticate people, transactions and objects, encrypt data and create value for software – enabling our clients in more than 190 countries to deliver secure digital services for billions of individuals and things.

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