

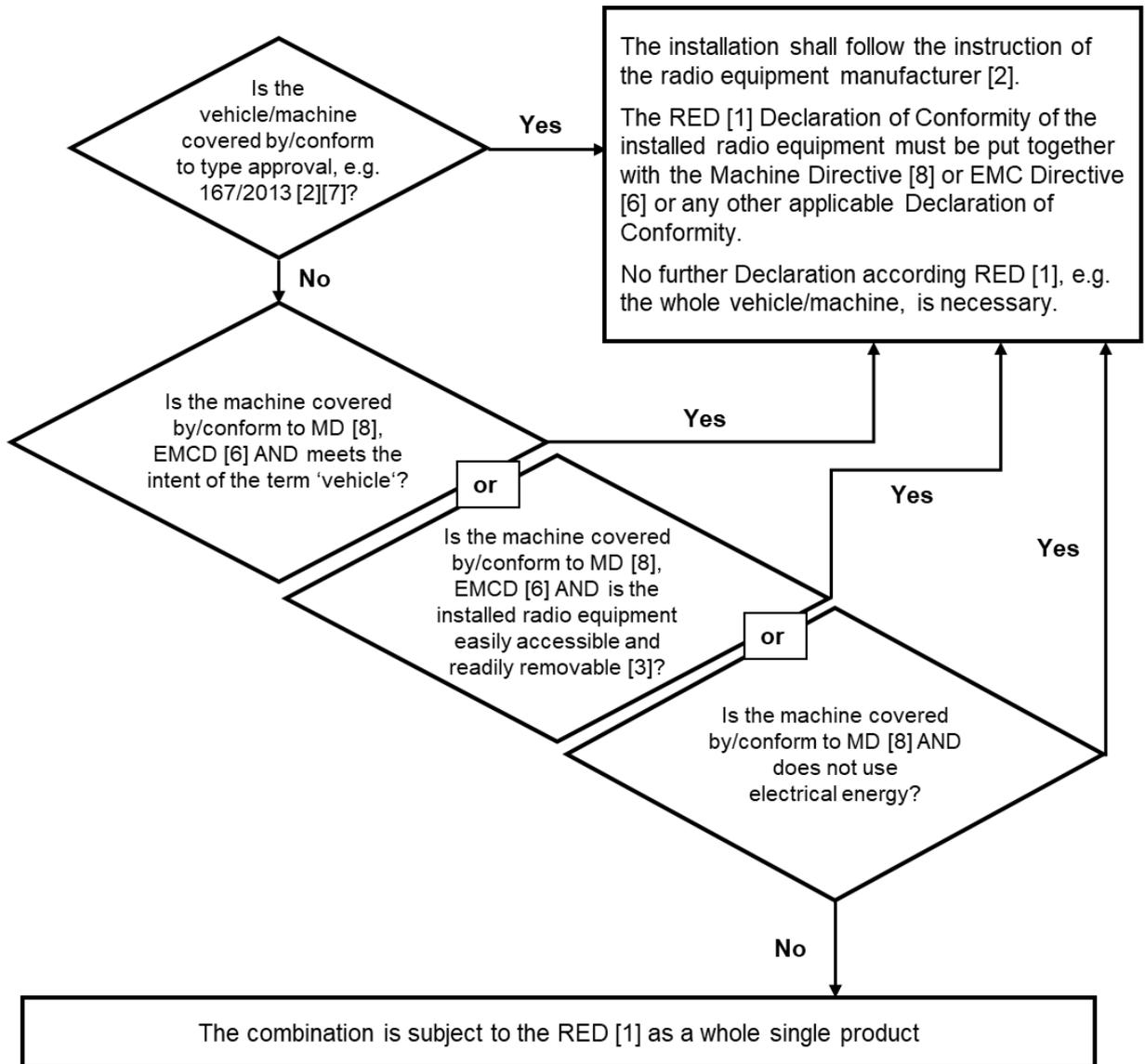
CEMA Position Paper

Application of Radio Equipment Directive 2014/53/EU with respect to agricultural machinery

20 February 2020

Summary

For the application of the Radio Equipment Directive 2014/53/EU [1] the Guide to the Radio Equipment Directive 2014/53/EU [2] and Supplementary Guidance on the LVD/EMCD/RED [3] are available. The application of clause 1.6.3.10 of the Guide [2] and clause 2 of the Supplementary Guidance [3] to agricultural machinery, tractors and implements that depend upon or utilize electrical energy to perform at least some function is an appropriate approach for ensuring radio equipment meets the essential requirements of the Radio Equipment Directive [1] given the typical use case as installed on these types of machines. This approach also ensures that the conformity of the combination of radio equipment installed on agricultural machinery, tractors and implements is fulfilled. It is therefore not appropriate to treat a combination of radio equipment and vehicle (such as agricultural machinery, tractors and implements) or other combinations of radio equipment and agricultural machinery with easily accessible and readily removable radio equipment as a whole product subject to the Radio Equipment Directive [1]. To follow this approach would cause redundant application of the essential requirements for electrical safety and electromagnetic compatibility as well as burdensome conformity assessment requirements preventing the aim of the New Legislative Framework.



Situation

The EU Directive 'Radio Equipment' (2014/53/EU) [1] lays down the conditions for placing radio equipment on the EU market. It is addressed to manufacturers of radio equipment (placing on the market) and defines both technical requirements and conformity assessment procedures. The technical requirements are intended in particular to ensure safety and health protection, an appropriate level of electromagnetic compatibility and effective use of radio frequencies and to prevent harmful interference to radio communications. If the manufacturer does not apply any or only

partially harmonized European standards as part of his conformity assessment, the directive provides for third-party certification.

In order to facilitate the application of the Radio Equipment Directive [1], a first but still incomplete Guide [4] was published in May 2017. This was followed in June 2018 by the publication of a second, complete guide [2], which also refers to another Supplementary Guidance [3] on the Low Voltage [5], EMC [6] and Radio Equipment [1] Directives.

This document provides an answer to the following question:

Agricultural machinery per se is not radio equipment, i.e. not electrical or electronic products which emit or receive radio waves for the purpose of communication or location. However, agricultural machinery can be equipped with radio equipment to enable these functions. This raises the question of whether and in what form the EU directive on 'radio equipment' should be applied to agricultural machinery.

Design Objectives

The objective of the product development process is to provide customers with high-quality, innovative and reliable products. Compliance with legal regulations is a mandatory part of every specification.

The objectives and technical requirements of the Radio Equipment Directive [1] are also consistent with the manufacturer's own specifications as they are essential for safe operation and reliable functioning. The Radio Equipment Directive [1] must also be applied in accordance with the other legal provisions applicable to a product. The respective responsibilities and expertise of OEMs and suppliers must be taken into account.

Need for action

Agricultural machinery products can vary from large self-propelled road and non-road mobile machines, to smaller mounted or towed implements and components. Agricultural machinery can vary in complexity, from simple mechanical machines to machines using complex electrical and electromechanical systems. In general, the size of agricultural machinery is typically much larger than any consumer product for domestic use. Not all, but most agricultural machines depend upon the power provided by a combustion engine

and utilize electrical energy to perform at least some function. It is also the case that the same machines depend upon or utilize or even generate other forms of energy or power (e.g. engine, PTO, hydraulic, pneumatic, forward propel) to perform other substantial work functions. Agricultural tractors are also included in this description, however agricultural tractors are subject of the EU Type-Approval regulation 167/2013 [7] defining tractors, towed implements and trailers as vehicles.

One of the main pieces of New Legislative Framework (NLF) that directly applies to most agricultural machinery is the Machinery Directive 2006/42/EU [8], which addresses the safety aspect of these different energy sources. Specific to machines with electricity supply: “it must be designed, constructed and equipped in such a way that all hazards of an electrical nature are or can be prevented.” Additionally, if the electrical supply is within 50 and 1000V alternating current or 75 and 1500V direct current, the Machinery Directive [8] requires that the safety objectives of 73/23/EEC (now Low Voltage Directive (LVD) 2014/35/EU [5]) are applied, but excludes the conformity assessment and placing on the market and/or putting into service requirements of the LVD [5] (see Machinery Directive [8], Annex I, 1.5.1).

Another piece of the New Legislative Framework that directly applies to most agricultural machinery is the Electromagnetic Compatibility (EMC) Directive 2014/30/EU [6], as by nature of its design, most agricultural machinery is liable to generate electromagnetic disturbance, or the performance of which is liable to be affected by such disturbance. It is important to note that while the EMC Directive [6] addresses performance or compatibility of machinery, the Machinery Directive [8] addresses immunity of machinery with respect to safety-related electromagnetic disturbance.

By addressing electrical hazards, electromagnetic immunity hazards and electromagnetic compatibility, it shows that the objectives of the Machinery Directive [8] and the EMC Directive [6] applied to agricultural machinery are consistent with the intent of the Radio Equipment Directive (Article 3, (1) a) and b) [1]).

The term ‘electrical/electronic equipment’ has a broad definition within existing published pieces of legislation and guidance documents (see e.g. [9] and [10]). It is clear that most agricultural machinery does not fit the intent, aim or scope of existing legislation using this term (or it is specifically excluded). Instead, the focus is on smaller electrical/electronic equipment and appliances intended for domestic use which depend

upon electrical energy for all functionality. However, **acknowledging that most agricultural machinery does depend upon or utilize electrical energy to perform at least some function, the approach taken with respect to the LVD [5] and the EMC Directive [6] in coordination with the Machinery Directive [8] must be considered when analyzing machinery against legislation focused on typical electrical and electronic equipment, such as the Radio Equipment Directive [1], to ensure its essential requirements are fulfilled while accounting for the uniqueness of agricultural machinery design.**

The following solution approaches are therefore described to provide guidance to manufacturers.

Solution approaches

Agricultural machines, tractors or implements by themselves generally do not intentionally emit and/or receive radio waves for the purpose of radio communication and/or radiodetermination. Radio equipment which can be easily accessed and readily removed (see Other types of Agricultural Machinery below) is typically installed on agricultural equipment to add more functionality and value for the end customer. Even if there is ambiguity on the fulfilment of the meaning of 'easily accessed and readily removed' the removal of the radio equipment from agricultural machines generally does not affect the primary agricultural function(s) that the machine provides. The following approaches are therefore allowable depending on the type of agricultural machine.

The safety of agricultural machinery and implement functions using installed radio equipment, considered in this document, is included in the Machinery Directive [8] and of tractors in EU Regulation 167/2013 [7] which includes a risk analysis of the intended use and therefore is the responsibility of the one placing the combination of installed radio equipment on agricultural machinery, tractors or implements on the EU market. Following the guidance found in 2.6 of the Blue Guide [15], it is therefore not appropriate to apply under RED [1] the safety of agricultural machinery and implement functions using radio equipment.

Mobile Agricultural Machinery

Agricultural tractors follow the EU Regulation 167/2013 [7] which requires EU Type-Approval. Agricultural implements can also apply 167/2013 [7] under the category 'R' or 'S' for EU Type-Approval. Self-propelled mobile agricultural machines require national

type-approval in most EU member countries to be operated on the roadway. Currently, there are efforts by National Agricultural Machinery Associations and their member companies (represented by CEMA) to create harmonized EU roadway legislation for self-propelled agricultural machines to take the place of independent member country requirements for such vehicles. Moreover, various EU regulations and directives, such as Restriction of Hazardous Substances (RoHS) 2011/65/EU [13], Waste of Electrical and Electronic Equipment (WEEE) 2012/19/EU [9] and Emissions 2016/1628/EU [14] treat self-propelled agricultural machines, implements and tractors equally in terms of their applicability.

It is with this view that it is appropriate that clause 1.6.3.10 of the Radio Equipment Directive Guide [2] shall be applicable to radio equipment installed on agricultural machinery meeting the intent of the term 'vehicle' like for tractors and implements. This means:

- In the case that the manufacturer is the same person for the installed radio equipment and machinery/tractor that is placed on the EU market, the manufacturer shall then fulfill the same obligations for the installed radio equipment as if the radio equipment was being placed on the market independent of the machinery/tractor (compliance to Radio Equipment Directive [1], instructions, risk assessment, intended use, etc.).
- The person who installs the radio equipment, already placed on the EU market, into his product shall follow the instructions of the radio equipment manufacturer. If he does not follow these instructions or if he modifies the radio equipment, this person shall be considered as the manufacturer of the radio equipment.

Additionally, as stated in clause 1.6.3.10 of the Guide [2] radio equipment installed on vehicles must comply with the requirements of both the Radio Equipment Directive [1] for its use case and all applicable EU acts. For radio equipment installed on agricultural machinery and tractors, this could include UN ECE Regulation 10 [11]. For agricultural machinery and implements which meet the intent of the term 'vehicle' above and apply New Legislative Framework legislations (Machinery Directive [8] and EMC Directive [6]), the Radio Equipment Directive [1] Declaration of Conformity for the installed radio equipment must be put together with the Machinery Directive [8], EMC Directive [6] and any other applicable Declarations of Conformity provided with the machine, as well as included in the machinery Technical Construction File.

Note: mounted implements on tractors or self-propelled machines, not covered by 'R' and 'S' categories, should also be considered a part of the vehicle or machine.

Other types of Agricultural Machinery

For other types of agricultural machinery which do not meet the intent of the term “vehicle” but depend upon or utilize electrical energy to perform at least some function, for example stationary machinery (e.g. bale wrappers, feed mixers, grain cleaning machines, etc...) and powered hand operated machinery (e.g. tillers, harvesters, planters, spreaders, etc.), a similar conclusion on how to treat radio equipment installed is given in clause 1.6.3.1 of the Guide [2] which refers to the Supplementary Guidance [3]. In the Supplementary Guidance [3], clause 2, it states that only if the radio equipment is incorporated and permanently affixed to the non-radio product that the Radio Equipment Directive is applicable to the combination. This is the same conclusion in the Guide of the repealed Directive (R&TTE Directive) for radio components that cannot be separated from the whole product [12].

Therefore, if the installed radio equipment can be easily accessed and readily removed (e.g. radio equipment using a plug-in connection to the machine that can be removed with or without instruction and common tools), then the radio equipment and non-radio product are considered as separate finished products and only the radio equipment is subject to the Radio Equipment Directive [1].

Additionally, clause 2 of the Supplementary Guidance [3] requires the radio equipment installed on non-radio products to comply with both the Radio Equipment Directive [1] for its use case and all applicable EU acts.

For other agricultural machinery which apply New Legislative Framework legislations (Machinery Directive [8] and EMC Directive [6]), with easily accessible and removable RED [1] compliant radio equipment installed, the Radio Equipment Directive [1] Declaration of Conformity for the installed radio equipment must be put together with the Machinery Directive [8], EMC Directive [6] and any other applicable Declarations of Conformity provided with the machine, as well as included in the machinery Technical Construction File.

Agricultural Machinery without electrical energy

If the agricultural machinery has no dependence or utilization of electrical energy to function in any way (e.g. entirely mechanical, pneumatic, hydraulic), and radio equipment is included in or attached to the machinery, then clause 3 of the Supplementary Guidance [3] shall be used to guide manufacturers on their responsibilities when placing the combination on the market.

Radio Equipment incorporated in a fixed and permanent way

Without prejudice to the earlier solution approaches, in the case that the radio equipment is installed on agricultural machinery such that it cannot be separated from the non-radio product (e.g. radio equipment with solder connection to the machine that cannot be removed without special tools and potential physical or functional (primary) damage to the machine or radio equipment), the combination is subject to the Radio Equipment Directive [1] as a whole single product according the clause 2 of the Supplementary Guidance [3]. In this case, removal of the radio equipment from agricultural machine would most likely also take away the primary agricultural function(s) that the machine provides.

Bibliography

- [1] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC
- [2] Guide to the Radio Equipment Directive 2014/53/EU (Version of 05 June 2018)
- [3] Supplementary Guidance on the LVD/EMCD/RED (Brussels, 26/04/2018)
- [4] Guide to the Radio Equipment Directive 2014/53/EU (Version of 19 May 2017)
- [5] Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
- [6] Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
- [7] Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5 February 2013 on the approval and market surveillance of agricultural and forestry vehicles
- [8] Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC
- [9] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)

- [10] International Electrotechnical vocabulary of IEC (International Electrotechnical Commission)
- [11] Regulation No 10 of the Economic Commission for Europe of the United Nations (UN/ECE) – Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility
- [12] Guide to the R&TTE Directive 1999/5/EC (Version of 20 April 2009)
- [13] Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- [14] Directive 2016/1628/EU of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery
- [15] Commission Notice of 5.4.2016 The 'Blue Guide' on the implementation of EU product rules 2016

About CEMA

CEMA aisbl (www.cema-agri.org) represents in total 4,500 manufacturers of agricultural equipment consisting of large multinational as well as numerous small and medium-sized enterprises (SMEs). The sector has a total annual turnover of €26 billion and provides employment for 135,000 people directly in the sector and another 125,000 persons indirectly in the distribution and service network.