RADIO AND NON-RADIO “COMBINED EQUIPMENT”

for: 53 Shades of RE-D: Six months to go

Presented by: Ian Marshall, Chairman TC ERM WG-EMC
Combined Equipment and the Radio Equipment Directive

- Article 3.1(b) i.e. EMC
- Article 3.2 i.e. Radio Performance

Issues connected with article 3.1(a) of the Radio Equipment Directive are not covered in this presentation.

- However, it should be noted that this article does apply
What is “Combined Equipment”? 

- Radio Enabled products, e.g. a Refrigerator with an internal web-cam
- Smart Products, e.g. control of domestic appliances by smartphone apps
- IoT, Internet of Things, e.g. connected home, connected factory

All of the above have one thing in common; the addition of radio functionality to a traditional non-radio product.

This market is expected to be worth US$ 37.2 Billion by 2020.
The Radio Equipment Directive (RED) article 1.4 states:

- ‘Radio equipment falling within the scope of this Directive shall not be subject to Directive 2014/35/EU, except as set out in point (a) of Article 3(1) of this Directive.’

LVD does not apply to equipment within the scope of the RED.

The EMC Directive article 2.2 states:

- ‘This Directive shall not apply to: (a) equipment covered by Directive 1999/5/EC.’

EMCD does not apply to equipment within the scope of the RED.

This means that for a Harmonised Standard to give presumption of conformity to article 3.1(a) or 3.1(b) it must be cited under the RED.
If other Directives apply to the product, e.g. the Machinery Directive, then these apply in parallel to the Radio Equipment Directive (RED).

Many existing standards only address issues around the core product or primary function.

When you add Radio, product behaviour changes.

Radio brings with it new opportunities and new challenges.
Guidance - background

Guidance for dealing with combined equipment under the R&TTED existed in TR 102 070-1, TR 101 070-2 and Annex C of EN 301 489-1.

However, the above guidance was based upon R&TTE Directive principles.

It was decided that this guidance needed to be updated to reflect the new situation.

ETSI TC ERM initially created a guide for combined equipment, taking into account the differences between the R&TTED and RED.
Article 2 (c) of the R&TTED states that “radio equipment means a product, or relevant component thereof, capable of communication by means of the emission and/or reception of radio waves utilising the spectrum allocated to terrestrial/space radiocommunication.”

Article 2.1 (1) of the RED states “’radio equipment’ means an electrical or electronic product, which intentionally emits and/or receives radio waves for the purpose of radio communication and/or radiodetermination, or an electrical or electronic product which must be completed with an accessory, such as antenna, so as to intentionally emit and/or receive radio waves for the purpose of radio communication and/or radiodetermination.”
RED definition of radio equipment does not allow for the option of treating a radio module or component separately from the main equipment.

The presence of a radio module or component makes the whole product radio equipment, i.e. combined equipment is radio equipment.
EG 203 367 published June 2016, aims to provide a common understanding:

- provides guidance for the conformity assessment of this type of equipment;
- provides guidance on how to make use of assessment(s) already performed on each constituent product of the multi-radio or combined equipment and to, whenever possible, identify the additional assessment necessary (Δ) to complete the conformity assessment procedure (CAP) of this type of equipment;
- provides guidance upon the selection of the appropriate limits and/or test conditions where different limits and/or test conditions exist in the standards applicable to each constituent product of the multi-radio or combined equipment;
- helps to avoid duplication of testing wherever possible.
Next steps

- Early solutions are expected to be realised through plug-in modules.
- Embedded solutions are expected to become the norm, as cost pressures drive integration.
- Embedded solutions need Harmonised Standards.
- EMC under article 3.1(b) is deemed to be the major work area.
- Simply citing EMCD standards under the RED is not an option.
Considerations for Harmonised Standards

- Existing Harmonised Standards under the EMCD or the R&TTE Directive contain different test ranges, test methods, and compliance limits.
- To perform each test only once, these differences need to be addressed.
- EG 203 367 is useful, but ultimately Harmonised Standards are needed.
- EG 203 367 was used as the framework for the Harmonised Standards for combined equipment.
Considerations for Harmonised Standards
...continued

- Re-use not re-invent
- Radio standards under article 3.2 are being revised to take into account RED requirements.
- Combined equipment usage is not expected to impact article 3.2 requirements.
- Addition of Radio changes a product’s EMC characteristics.
- Products containing components with large current loads can impact radio performance.
ETSI WG-EMC has been drafting the first of a series of Harmonised Standards under article 3.1(b).

EN 303 446-1 covers products intended to be used in the residential, commercial and light industrial locations.

This standard is built around the concept of normatively referencing out to existing Product EMC standards for test set-ups and limits.

The drafting team has brought together many new experts from outside the traditional ETSI Radio world.

This draft is currently in pre-processing, ahead of its formal approval process.
ETSI WG-EMC has also started drafting the second of a series of Harmonised Standards under article 3.1(b).
EN 303 446-2 covers products intended to be used in industrial locations.
This standard is taking on board the results of many of the discussions and conclusions arriving out of the work on EN 303 446-1.
It is recognised that the industrial environment works to higher immunity test levels than is seen for standard radio equipment.
This draft is still in its early stages.
Looking ahead

- ETSI TC ERM WG-EMC continues to work on EN 303 446-2
- Do we need more in the EN 303 446 series?
- All meetings, both online and physical announced on ETSI portal [here](#)
- Next Full meeting of WG-EMC 31\(^{st}\) Jan 2017 at ETSI HQ
Any Questions?

Thank you!