



CE



Guide to CE Marking & The Radio Equipment Directive

For Low Power Wireless Transmitters



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Complete EMC & Environmental Stress Testing

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CE Mark & RE Directive Overview

What is the CE Mark and where does it apply?



The CE Mark is the label placed on manufactured and imported goods in the European Union. It declares that a product meets the applicable essential health and safety requirements for European citizens.

This one label and the regulatory infrastructure behind it comprise the product conformity laws for the 28 European Union nations along with the EFTA countries of Iceland, Liechtenstein, and Norway. The CE processes are also adopted by Switzerland and Turkey through separate trade agreements. The CE Mark replaces a patchwork of individual regulatory schemes where previously every one of the separate European countries operated with their own rules, regulations, process, and conformity marks.

Many non-European nations also accept CE mark technical compliance file as evidence of conformity with their regulations without the need for further tests and evaluation. And though some nations will only accept “in-country” testing, they still follow standards aligned with the procedures and technical requirements specified in the European CE Marking regulations.

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What is the CE Mark and where does it apply?

The CE regulations cover a broad range of products and set the requirements for the essential health and safety of Union citizens as well as for product operability. There are over 20 different new approach directives. Some are product and industry specific directives for categories such as medical electronics and radio transmitters and others are more general directives such as Low Voltage or EMC.

The CE mark is indeed a wide-ranging European requirement, but its acceptance and adoption by other nations plus the broad range of products that it applies to makes its reach truly global.



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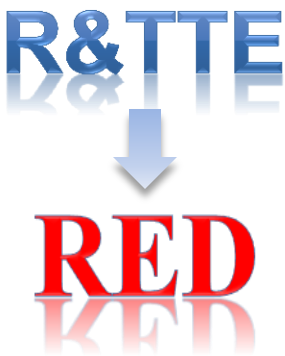
CE Mark & RE Directive Overview

What is the RE Directive?

R&TTE Directive Transition

June 12, 2016: Either R&TTE or RED

June 13, 2017: Only RED



The focus of this document is to describe the CE Marking conformity assessment process for low power short range wireless devices. This information will address the more common transmitters and receivers such as Bluetooth, WiFi, Zigbee, and other low power devices. Most of these transmitters have operating frequencies which are harmonized for use throughout the EU.

In June 2016 the Radio Equipment Directive (RED) became the new compliance requirement in Europe for wireless transmitters. The RED replaced the R&TTE Directive which was the requirement for radio transceivers and telephone equipment. During the period between June 2016 and June 2017 manufacturers were allowed apply either the R&TTE or the RE Directives. After June 2017 manufacturers are required to comply with only the RE Directive.

Many other of the European New Approach Directives have also been updated recently including the EMC and Low Voltage Directives. The new EMC and LVD came into law in April 2016 but without any transition period.

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CE Mark & RE Directive Overview

What is the reason behind the update in the CE Mark & RE Directives?

New Legislative Framework (NLF)

- Regulation (EC) No 764/2008
- Regulation (EC) No 765/2008
- Regulation (EC) No 768/2008

Main objectives of NLF Regulations

- Restate and detail definitions , ie
 - Manufacturers
 - Importers
 - Distributors
 - Representatives
- Structure policies for accreditation
- Update Notified Body requirements
- Address market surveillance
- Enhance import controls
- Clarify meaning of CE Mark

The recent changes to the European CE directives are driven by initiatives for alignment with the EU's New Legislative Framework (NLF). The New Legislative Framework is a set of EU regulations that provide enhanced definitions and specific descriptions on the European conformity processes.

They provide more detail for the meaning of the CE Mark so that the responsibilities of all economic operators are clear. The NLF regulations bring better clarity and process for policies on accreditation and for recognition of notified bodies and other conformity assessment parties.

In addition, the NLF establishes a more structured process for enhancing import controls and for addressing market surveillance. The objectives of the NLF is to lessen the burden on manufacturers and importers and improve trade while maintaining the safety of users.

For a few manufacturers the technical changes resulting from the alignment of directives with the NLF will be significant. However, for most manufacturers within the scope of the R&TTE or new RED the impact of the changes will be minimal. More detailed information regarding regulatory obligations for manufacturers, importers, distributors and representative can be found in the European Union's "Blue Guide".

1 CE Mark & RE Directive Overview

What types of products are covered by the RE Directive?

The Radio Equipment Directive, or RED is a product-specific directive that establishes the requirements for all wireless transmitters and receivers, with the exception of devices used exclusively for military, state security, radio amateurs, and civil aviation.

The scope of the RED includes radio devices that range from cell phone handsets and cell base stations to licensed 2-way land mobile radios and their base stations. It covers microwave backhaul transmission systems, certain marine applications, emergency beacons, radar, radio astronomy, and many others.

One of the common characteristics for these aforementioned devices is their transmit power levels are typically at or above 1W (*low power devices are described next*) and many are licensed service applications, meaning that in addition to the device conformity assessment the end user may need to receive a license to transmit at the particular frequency band. VHF and UHF business and professional radios are examples of licensed device applications.

Licensed devices receive exclusive rights to transmit on a particular frequency, at a specified power, and for a defined geographic location. However, unlicensed transmitters are permitted to transmit on certain licensed bands but at power levels that will not interfere with licensed users.



Ex. licensed devices and higher power transmitters

1 CE Mark & RE Directive Overview

What type of low power transmitters are covered?

License exempt transmitters include many familiar consumer products like WiFi, Bluetooth, ZigBee, remote keyless entry, RFID, and garage door controls.

These devices typically transmit at less than 200mW and operate in designated frequency bands with specified powers, bandwidths, and duty cycles. They are primarily sold without the user having to obtain a license.

The applications for low power wireless transmitters are growing rapidly and feeding the pace of expansion for the Internet of Things. Manufacturers of wireless devices that are sold into Europe must comply with all the regulations associated with the CE Mark plus any other non-CE requirements.

The CE regulations cover a broad range of products and set the requirements for the essential health and safety of Union citizens as well as for product operability. There are over 20 different new approach directives and many other non-CE directives and EU regulations. Manufacturers need to be compliant with all the applicable requirements.

The CE mark is indeed a wide-ranging European requirement, but its acceptance and adoption by other nations plus the broad range of products that it applies to makes its reach truly global.



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Step 1	Determine All Applicable Requirements Directives Frequency Bands Conformity Assessment Module Harmonized Standards
Step 2	Perform Testing and Analysis Effective Use of Spectrum EMC Low Voltage Directive
Step 3	Prepare Technical File
Step 4	Label Device and Issue the DoC
Step 5	Maintain Technical File and Continuing Compliance

Determine CE Mark Requirements

What is the process for RE Directive CE Marking?

For most wireless products, The RED conformity assessment process can be summarized in five steps.

Step 1 begins by determining the applicable directives, technical standards, and conformity assessment procedures.

Step 2 covers the tests and engineering assessments of the design, construction, and safety operations.

In **Step 3**, the reports and findings from the evaluations are prepared, collected, and maintained to substantiate the product's compliance.

Finally in **Step 4** the product is labeled and a Declaration of Conformity (DoC) is prepared to notify the end user and regulatory agencies that the product is ready for placement in the market.

In **Step 5**, manufacturers are required to maintain compliance throughout the life of the product. This includes evaluating continuing compliance despite component replacements, product improvements, and redesigns.

New Approach CE Marking Directives

General Directives	Product or Application Specific Directives	Product or Application Specific Directives
<p>Chemical substances (REACH) Ecodesign – hot-water boilers Ecodesign and energy labelling Ecodesign and energy labelling Eco-management and audit scheme (EMAS)</p> <p>Electromagnetic compatibility (EMC) Equipment for explosive atmospheres (ATEX)</p> <p>Low Voltage (LVD) Machinery (MD) New legislative framework (NLF) Packaging and packaging waste</p> <p>Restriction of hazardous substances (RoHS)</p>	<p>Explosives for civil uses Gas appliances (GAD) Inspection pesticide application equipment Lifts Measuring instruments (MID) Medical devices (MDD) Medical devices: active implantable Medical devices: in vitro diagnostic</p>	<p>Non-automatic weighing instruments (NAWI) Personal protective equipment (PPE) Pressure equipment (PED) Pyrotechnic articles Radio Equipment Directive Rail system: interoperability Recreational craft Simple Pressure Vessels Toys safety</p>

2

CE Mark Directives

*Determine
Which CE Mark
Directives
apply?*

The European Union CE Mark directives are a common set of requirements for all member states. They eliminate trade barriers and facilitate the free movement of goods. They outline the objectives for community wide compliance with a particular aspect of technology, environment, or trade.

The actual technical requirements are specified in detail through harmonized “EN” standards.

Beginning at **Step 1** of the CE process, manufacturers are responsible for identifying all the directives that may apply to their products and applications. There may be a single product specific directive to cover all compliance requirements or several and it is the manufacturers obligation to conduct a comprehensive review to determine all which are applicable.

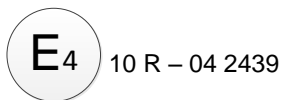
As an example, a consumer WiFi router will need to comply with the product specific RE Directive, but will likely also have to comply with the RoHS and REACH directives.

2



Type Approval Directives

What other type-approval directives apply?



E-Mark

- UNECE Regulation 10.5
- Passenger Cars, Trucks, Buses, Trailers
- Ag & Forestry Tractors

Marine Equipment Directive

- 96/98/EC

In addition to the New Approach CE Marking directives, other European regulations may apply. For example, if a wireless transmitter is integrated into a passenger car, truck, bus, or agricultural tractor and that wireless device also has an immunity related function such as a CAN bus link, then the device may also have to carry the “E-Mark” to evaluate the performance of the device related to the safe operation of the vehicle.

The E-Marking type approval process for EMC involves testing the product with a Notified Body witness. It also includes a quality assessment to assure the conformity of production as well as other continuing compliance obligations.

Marine applications may also require type approval services. Certain on-board marine transmitters that are covered by the International Maritime Organization requirements for Safety of Life At Sea (SOLAS) are type-approved under the Marine Equipment Directive, but may also carry the CE Mark if they have other applications on shore.

2



Harmonized Frequencies

Which transmit frequency bands are permitted?

www.erodocdb.dk

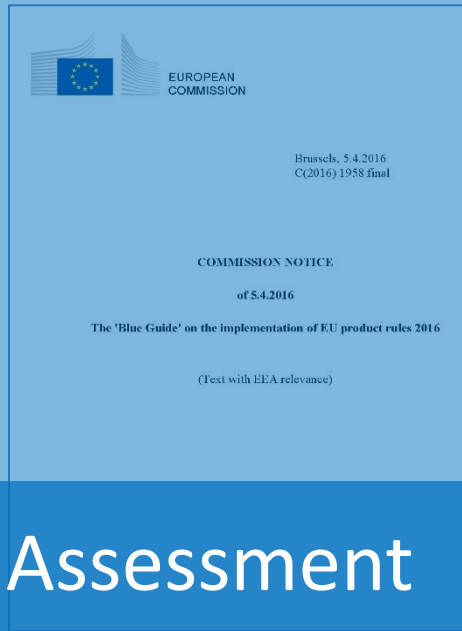
www.efis.dk

Having identified the applicable directives and requirements, the transmitter manufacturer must also ensure the transceiver is authorized for use at the particular frequency bands of operation. There are several European website portals which provide up to date information and guidance on spectrum allocation for their particular device and they include other helpful information on guidance, standards, licensing, and other requirements.

The European Communications Office (ECO) is an organization that serves member countries and adjacent neighboring markets for collaboration on a harmonized radio spectrum. The ECO maintains a website portal www.efis.dk that includes the Frequency Information System (EFIS) where details on frequency allocation, band tables and restrictions, and other utilities that identify operations across the radio spectrum.

- The ECO website portal also maintains the current revision of the primary guidance document for short range devices identified as ERC Recommendation 70-03 www.erodocdb.dk
- ERC 70-03 provides a helpful summary of the compliance requirements and country specific harmonized frequencies for common low power short range transmitters.

2



Conformity Assessment

Can I self-declare compliance with the RE Directive?

Conformity assessment is the process for evaluating a manufactured product to the European Union regulations. Because of wide range of wireless product types, users, and environments the RE Directive offers several options assessing compliance. The most suitable conformity procedure should be selected based on the needs of each application.

For the RE Directive there are three options for conformity assessment when a harmonized standard has been applied. These are given in the directive Annexes II, III, and IV.

The conformity assessment procedure for the majority of low power short range devices is based on an internal production control and testing process according to harmonized standards. Since there are many harmonized standards for low power short range devices, ie. EN 300 220, EN 300 440, and EN 300 328, Annex II is often applied and is commonly called “manufacturer’s self declaration”.

A more detailed description on the CE Marking process and the various conformity assessment modules is presented in the European Union “Blue Guide” on the implementation of EU product rules. It is available from the www.europea.eu web portal.



2

Harmonized Standards

Which harmonized standards apply to my transmitter?

Once the directives and frequencies are identified, the next step is to determine the applicable technical requirements to apply for the assessment.

European technical requirements are provided in the harmonized standards published in the Official Journal (OJ) of the European Union. Harmonized EU standards are given the prefix “EN” for Euro-norm. Products evaluated to an EN harmonized standard means the manufacturer is given the “presumption of conformity” with the directives.

A list of harmonized standards is published in the Official Journal (OJ) of the European Union and are noted as harmonized EU standards with the prefix “EN”. Products evaluated to an EN harmonized standard means the manufacturer is given the “presumption of conformity” with the directives.

A harmonized standard is an international standard that has been developed through various standards development organizations like CEN, CENELC and ETSI. These requirements are drafted by industry experts, manufacturers, and government regulators and then through diplomatic consensus harmonized into a Euronorm “EN”.

For the RE Directive, the OJ identifies standards to apply for effective use of spectrum, EMC, and electrical safety.

Since wireless technology is constantly evolving, the harmonized standards used to assess compliance also change. Manufacturers are responsible for monitoring the “OJ” to recognize when standards change and respond accordingly as test limits, processes, or measurement technology update with technological progress.

2

Harmonized Standards

Which harmonized standards apply to my transmitter?

Reference ec.europa.eu and Radio Equipment Directive harmonized standards to view the latest edition of the Official Journal (OJ). It includes references to current and superseded harmonized standards.

ESO ⁽¹⁾	Reference and title of the standard (and reference document)	First publication OJ	Reference of superseded standard	Date of cessation of presumption of conformity of superseded standard Note 1	Standard aims to cover Article(s) of Directive 2014/53/EU
(1)	(2)	(3)	(4)	(5)	(6)
ETSI	EN 300 065 V2.1.2 Narrow-band direct-printing telegraph equipment for receiving meteorological or navigational information (NAVTEX); Harmonised Standard covering the essential requirements of articles 3.2 and 3.3(g) of the Directive 2014/53/EU	8.7.2016			Article 3(2); Article 3(3)(g)
ETSI	EN 300 086 V2.1.2 Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU	9.12.2016			Article 3(2)
ETSI	EN 300 113 V2.2.1 Land Mobile Service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU	This is the first publication			Article 3(2)

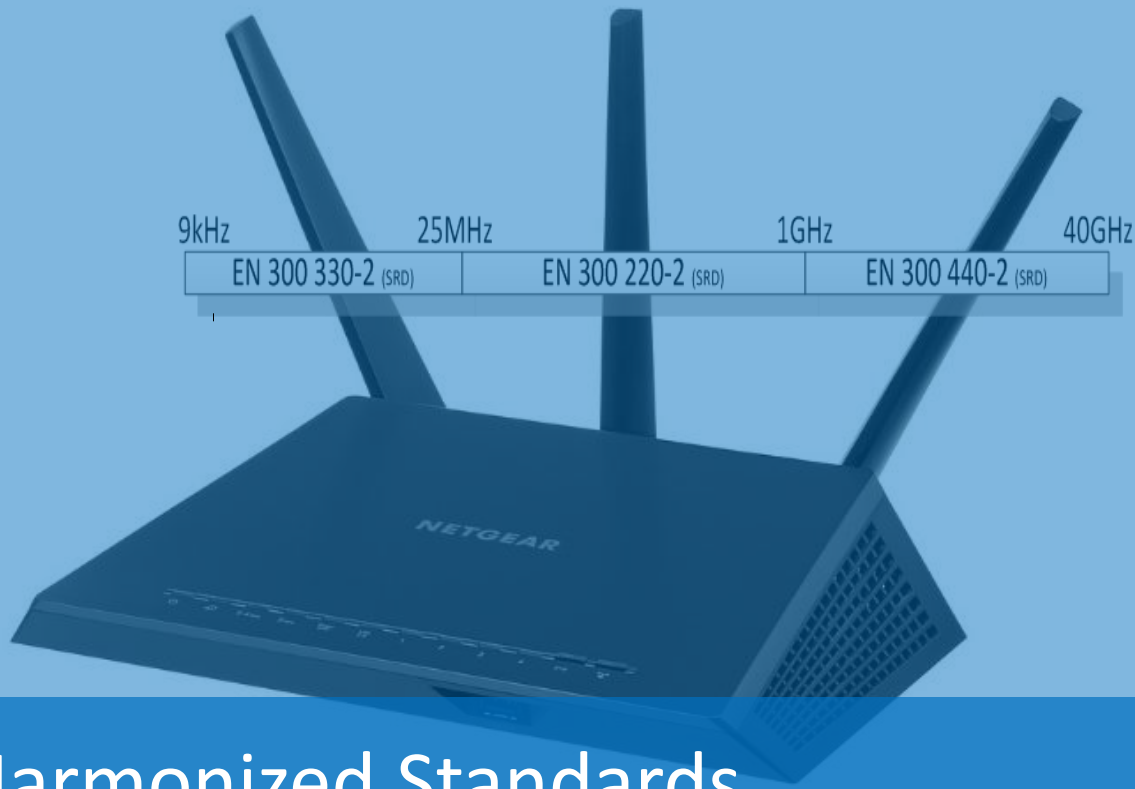
Current requirement

Superseded requirement

Last date to use superseded HS

LVD 3(1)(a)
EMC 3(1)(b)
Spectrum 3(2)

2



Harmonized Standards

Product specific vs. generic standards?

Product Specific Standards

EN 300 328– 2.4GHz wideband Tx/Rx

- WiFi 802.11b/g/n
- Bluetooth
- Zigbee

EN 301 893– 5GHz wideband Tx/Rx

- WiFi 802.11 a/n/ac

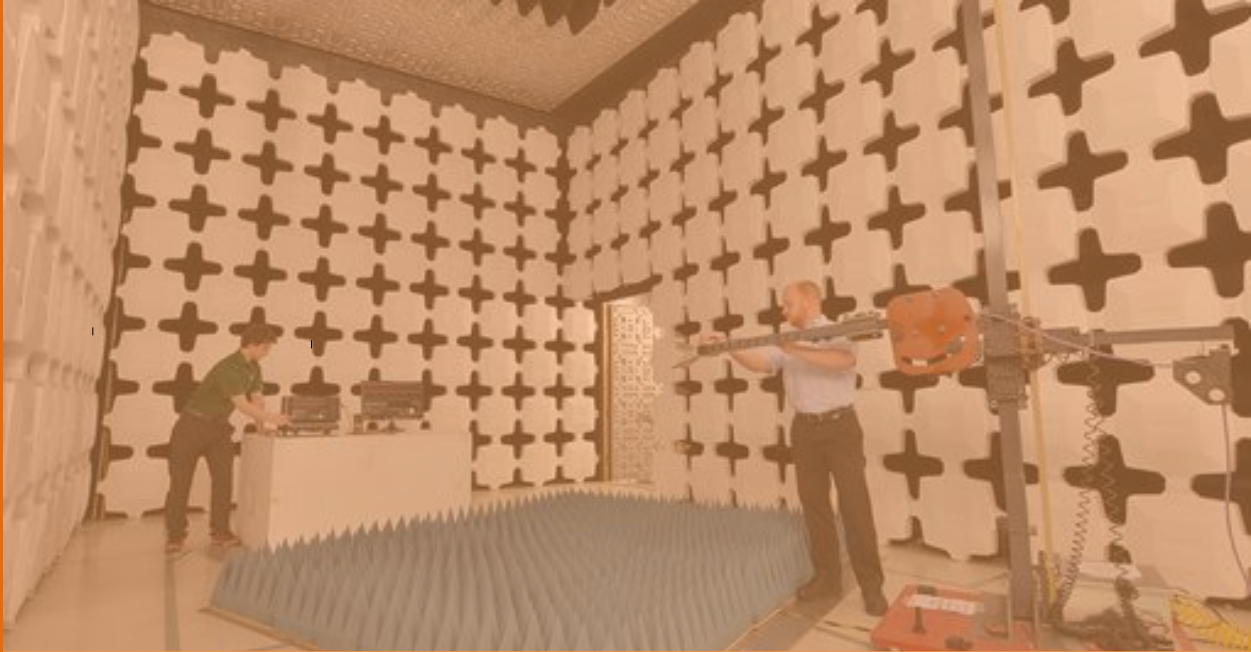
For the RE Directive, the harmonized standards are organized into product specific standards and more generic application standards. Product specific standards nearly always take priority over more generic standards. An example of a common specific standard is EN 300 328 for wide band transmitters operating in the 2.4GHz band.

- For short range devices, the more common generic harmonized standards include:
- EN 300 220- Garage door openers, remote keyless entry
- EN 300 330- Theft protection sensors, Near Field Communication (NFC)
- EN 300 440- RC Toys and RFID

These three generic radio transmitter standards are organized by frequency range and include both narrowband and wideband devices.

Manufacturers are encouraged to contact regulatory experts or EMC test labs that specify in RE Directive testing for guidance on the harmonized standards to apply, frequency band usage, and other requirements to consider.

3



Tests for Effective Use of Spectrum

Output Power
Spurious Emissions
Transmitter Functions
Bandwidth Usage
Adaptivity
Receiver Functions

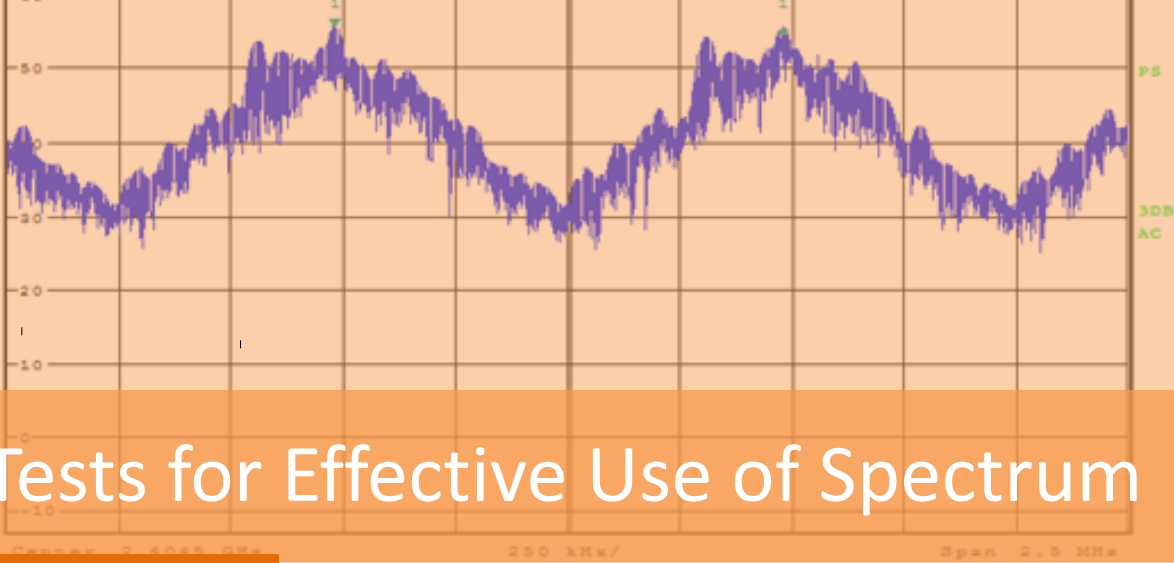
Wireless transmitter testing often takes place in an absorber lined shielded enclosure (a 3 or 10 meter ALSE chamber) as well as in open space. Some testing also occurs in a temperature controlled environmental chamber.

Two of the primary tests performed on wireless transmitters are measurements of the **output power and the spurious radiated emissions**. These tests are performed by measuring at the transmitter antenna port through attenuation and directly into the measurement receiver's input. In addition, measurements are performed as a radiated test in an anechoic chamber or an open air test site (OATS).

Power and spurious emissions testing is performed with the transmitter operated at the fundamental frequency or at several channels, i.e. low, mid, high frequencies within the operating band. Radiated measurements are first recorded by the compliance receiver as a field strength then converted to power units.

Receivers are also tested for spurious emissions from the antenna port as well as by a radiated emissions test. And just as is the case with transmitters, receivers may need to be tested while tuned to low, mid, or high channels.

3



Tests for Effective Use of Spectrum

Output Power
Spurious Emissions
Transmitter Functions
Bandwidth Usage
Adaptivity
Receiver Functions

In addition to measurements of power and spurious emissions, other testing is performed to evaluate the transmitters in-band and adjacent channel performance. The nature of this testing depends on if the device communicates using narrowband or wideband techniques. For narrowband transmitters the measurements confirm that RF energy remains within a specified bandwidth and falls off at the band edges to limit adjacent channel interference. Typically the narrowband transmitters tests include:

- Permitted Range of Operating Frequencies
- Frequency Error & Drift
- Transient Power
- Adjacent Channel Power

Some of these tests may be performed while the transmitter voltage and temperature are at extremes to confirm the stability of the device performance under variable conditions.

Wideband transmitters typically disperse their RF energy by 500kHz more through the application of frequency hopping or digital modulation schemes. Measurements for wideband transmitters include:

- Dwell Time, Minimum Frequency Occupation
- Hopping Sequence, Hopping Frequency Separation
- Occupied Channel Bandwidth, Modulation Bandwidth
- Unwanted Emissions in Out-of-Band Domain

3



Tests for Effective Use of Spectrum

Output Power
Spurious Emissions
Transmitter Functions
Bandwidth Usage
Adaptivity
Receiver Functions

As wireless transmitters proliferate, spectrum sharing has become more important. Many regulations and standards now require that radio devices share spectrum and reduce the probability of interfering with one another. Spectrum sharing by transmitters is accomplished by either limiting the utilization of the frequency band through a transmit duty cycle or by an adaptive process. Typically wireless devices must employ some form of spectrum sharing if the transmit power exceeds 10 mW.

For >10mW transmitters, duty cycle limits restrict the device transmissions to an aggregate communication period that is a fraction of an hour and stated as a percentage. This is confirmed during the testing phase both by measurement as well as by a review of transmitter operational information.

Without duty cycle limits, transmitters need to employ an adaptive frequency agility function that “listens” to the channel before transmission and make a clear channel assessment. If the channel is open the device can proceed with transmission for a specified time then repeat the listen, assess, and transmit process. If the channel is occupied then it must either reduce power, wait, or move to a different channel.

In order for adaptive frequency agility systems to operate properly the receiver functions must also be sensitive to the intended signal and selection. Receivers are tested to determine their capability to operate as intended when presented with an unwanted signal (blocking signal) on frequencies other than those of the operating channel and the adjacent channels.

4



Tests for EMC

EN 301 489-1 Emissions Testing

- RF Conducted Emissions
- RF Radiated Emissions
- Low Frequency Harmonics

EN 301 489-1 Immunity Testing

- Electrostatic Discharge
- RF Radiated Immunity
- Conducted RF Immunity
- Fast Transients/Burst Surge
- Voltage Dips & Interruptions
- Magnetic Field Immunity

Product Specific EMC Standards

- EN 301 489-3 Short Range Devices
- EN 301 489-17 Broadband Wireless
- EN 301 489-33 Ultra Wide Band
- EN 301 489-52 Mobile phones

As stated in Article 3.1(b) of the RE Directive, all radio equipment must an adequate level of electromagnetic compatibility as set out in Directive 2014/30/EU. The harmonized standards to apply for EMC on wireless devices are listed in the Official Journal for the RED, EMC Directive, or on the ESTI.org website.

EMC requirements include tests for RF emissions and low frequency harmonics and flicker. RF emissions are measured both on the AC or DC mains port as well as on telecom ports when applicable.

In addition to emissions testing, the EMC directive evaluates the susceptibility of a radio transceiver to a range of RF and electrical transient conditions. Typically immunity testing is performed on the radio transceiver integrated into host electronics. In this configuration the assembled system can be evaluated for the conditions present on the main power leads and signal leads and can be evaluated properly for the threats that are protected by the enclosure.

A series of harmonized standards are listed in the Official Journal to cover various applications of wireless transmitters. Many of the EMC harmonized standards for low power transmitters have a product specific “EN” to adapt the general EMC standard EN 301 489-1 for the particular application.

5



Test/Analysis for Electrical Safety

Common RE Directive LVD Safety Harmonized Standards

- EN 60950-1 Information Technology Equipment
- EN 61010-1 Industrial measurement & control
- EN 60065- Audio, visual

Typical Electrical Safety Testing Includes:

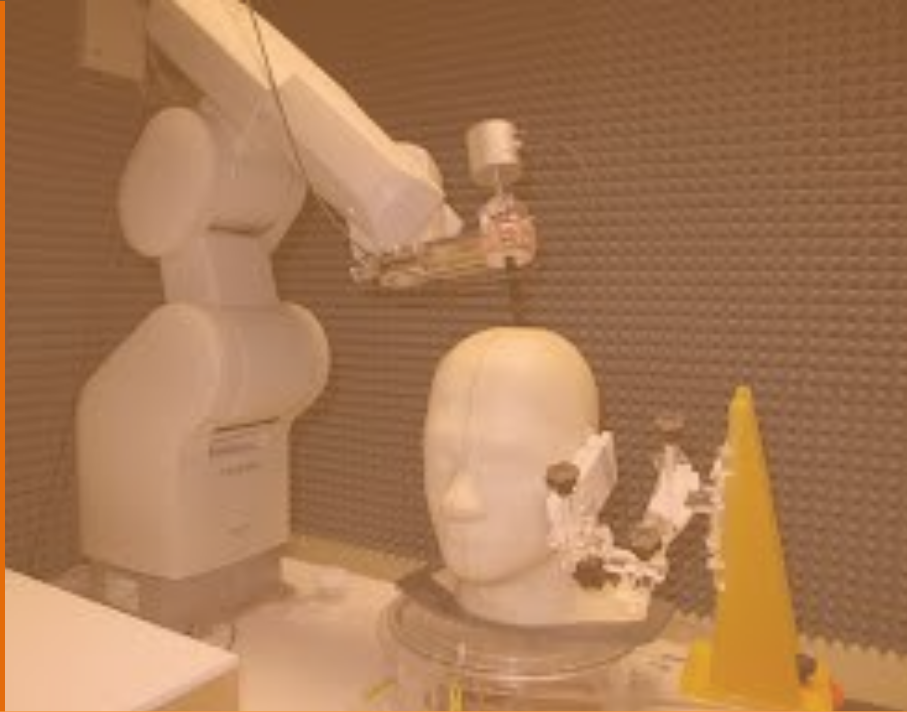
- Abnormal fault, short to ground
- Temperature rise to evaluate insulation ratings
- Dielectric withstand & ground bonding
- Safety label durability
- Impact resistance
- Creepage & clearance measurements

As stated in Article 3.1(a) of the RE Directive, manufacturers must ensure electrical safety with respect to requirements set out in Directive 2014/35/EU, but with no voltage limit applying. This means that even battery equipment or 12VDC powered electronics that might have fallen outside the scope of the Low Voltage Directive because the operational voltage is less than 50 VAC or 75 VDC will have to comply with the requirements of the Low Voltage to be compliant with the RE Directive.

The LVD evaluation primarily addresses the hazards of electric shock and electrical initiated fire. Other safety hazards include thermal based, ionizing radiation based, or from radio frequency transmission.

The LVD process involves an initial inspection of the test item including schematics, instruction manuals, safety labeling, and other warnings. From that review, a compliance checklist is generated to confirm those elements of the design and construction meet the objectives of the safety standards. Those items not meeting the intent of the standard must be addressed so that the hazard is mitigated.

5



Test/Analysis for RF Hazards

NOTE:

Each wireless application has unique considerations when evaluating hazards from RF exposure, i.e. distance from the body, transmit power, duty cycle, type of application.

Contact Elite experts to review your specific requirements.

Transmitters that are hand held, body worn, or operate within 20cm of a person may require an evaluation for hazards from RF exposure and Specific Absorption Rate (SAR). A SAR test report is required to be submitted as part of an electrical safety technical evaluation.

Maximum Permissible Exposure (MPE) requirements may apply for transmitters that operate at distances greater than 20cm with power levels above limits based on transmit frequency.

Typical standards for evaluation of RF hazards include:

EN 62479:2010- Low Power Devices RF Exposure

- Include evaluation of RF Hazards in TCF
- Review standard to evaluate exclusion vs. distance

EN 62311:2008- Generic Standard for RF Exposure

- Determine scope of hazard
- Relaxation of exclusions
- Consider impact of RF hazard due to co-located transmitters

6



Documentation

What are the requirements for a technical file?

The technical file must be kept by the manufacturer or his authorized representative in the EU for at least 10 years after the date of manufacture.

The file must be available in at least one language of the EU (English is suitable).

The RE Directive requires manufacturers maintain technical documentation that describes the due diligence applied for CE Mark compliance. The type of information required includes the following:

- Declaration of Conformity (DoC)
- General operational description and configuration of the product including permitted antenna types that when used will ensure compliance with the requirements.
- Design and manufacturing drawings and schematics of components, sub-assemblies, circuits, etc. for the purpose of informing how the devices meets the essential requirements.
- Test reports describing the harmonized standards that have been applied in full or in part. If harmonized standards have not been applied in full then analysis, design evaluations, related test reports, inspections and examinations are used to demonstrate compliance.
- User information to describe how the product is intended to be used and any precautions to be observed in installing, using and maintaining it, and in particular information necessary to use the device in a manner that ensures compliance.
- Software, firmware, or hardware configuration when its type or revision level may affect compliance.

Annex V of the RED provides further detail and organization framework for the documentation.

6



Documentation

Who is responsible for the Declaration of Conformity?

Every wireless product marketed in the European Union must have a Declaration of Conformity. The “DoC” is prepared by the manufacturer, importer, or the European representative and must be signed by a person having the authority to legally support the claim of compliance.

There is not one specific required format for a DoC but as a general layout it must include the following information.

Declaration of Conformity (DoC)

- Name of manufacturer or importer
- Name and address of European representative
- Name, model number, and description of product
- Directives and harmonized standards (with revisions noted)

In cases where several directives apply simultaneously to the apparatus, a single DoC can be issued to reference all regulations, unless the Directive specifically states it must be a separate document.

The DoC for a device that falls under the scope of the RED will need to be shipped with the wireless device otherwise a short form DoC can be sent with the product and the primary DoC can be provided by a website link.

EC Declaration of Conformity

Declaring Organization: *My Company, Inc.*
1234 Smith Road
Anytown Illinois, 60515

EU Representative: (include name, address)

XXXX
XXXXXX
XXXXXX

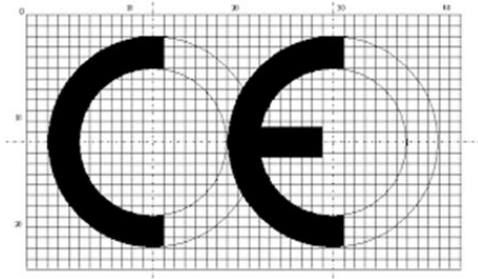
Product Name: (Radio Transmitter ABC)
Product Model Name: (High Performance Unit)
Product Description: (Wireless communication link)

We, My Company, Inc. declare under our sole responsibility that the above named product conforms to the essential requirements of the European Union Directive 2014/53/EU on Radio Equipment and Restrictions of certain Hazardous Substances Directive 2011/65/EU. The following harmonized standards are those to which the product's conformance has been verified.

Directive 2014/53/EU on Radio Equipment	Harmonized Standards Granting Presumption of Conformity
Data transmission equipment at 7.4 GHz ISM band using wide band modulation techniques. Covering Article 3.2 of the RED Directive.	EN 300 322 V1.9.1
Electrical equipment for measurement, control and laboratory use - EMC requirements. Covering Article 3.1(a) of the RED Directive.	EN 61326-1:2013
Safety requirements for electrical equipment for measurement, control and laboratory use. Covering Article 3.1(a) of the RED Directive.	EN 61010-1:2010
Reduction of Hazardous Waste	2011/65/EU
Transmitter Frequency: 2412Mhz±20KHz. Max EIRP: 100mW	

Signed by: _____
Name: { }
Position: { }
Date: { }

6



Markings

Do I need permission to place the CE Mark on my device?

Radio devices in the European Union must have the CE Mark affixed on the device in order to signify its compliance with the RE Directive. Requirements for the layout and placement of the mark include:

- Minimum height = 5 mm.
- Must be affixed permanently and indelibly
- Placement anywhere on the apparatus or in the battery compartment as long as a tool is not needed to view it.
- Placement on packaging and accompanying documents (if any).

Affixing the CE marking denotes compliance with all applicable EC “new approach” directives and this may necessitate including other markings for items like waste electrical and electronics processing or explosive environments. The Radio Equipment Directive can typically be assessed as a manufacturers declaration and in many cases the declaration will not require the intervention of a third party Notified Body type certification. Refer to each applicable directive to identify the necessary labeling and conformity assessment process.

7

Transitioning to the RED

How will the new directive impact my compliance?

Equipment now within the RED

- Broadcast sound and TV receivers
- Transceivers below 9 kHz
- Radio-determination devices (radar, RFID)

R&TTE equipment now excluded from RED

- Telecom terminal equipment (now covered by EMC and LVD)
- Custom built evaluation kits destined for professional R&D facilities

Many existing wireless devices are currently assessed for CE to the R&TTE Directive but these devices must conform with the new RED after June 13, 2017. Any new radio transmitter or receiver sold into the European Union on June 13, 2017 or later will have to be assessed for compliance with the RED 2014/53/EU.

Some of the significant differences between R&TTE and RED include:

- Telephone terminal equipment will no longer be included in the new RE Directive and will instead fall under the scope of the EMC and Low Voltage Directives. Other R&TTE products will be excluded from the RED while other devices will move from the EMC directive to the RED (see left).
- It will no longer be required to notify spectrum agencies of Class II equipment and Class II alert sign labeling is no longer required. Class II devices are those whose operations are restricted in Europe.
- Notified Body numbers will no longer be applied (except for full quality assurance)
- Type Examination Certificates will replace Notified Body opinions
- The RED now covers radio communication and radio determination position, velocity, or other characteristic by way of radio wave propagation including equipment below 9kHz

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Transitioning to the RED

How will the new directive impact my compliance?

Additional new RED requirements for Cellular:

- Common chargers, especially for mobile phones
- Ensure network compatibility
- Have appropriate telecom interfaces
- Cause no harm, misuse, or unacceptable degradation of network services
- Protect personal data and privacy of user subscriber
- Protect from fraud
- Ensure access to emergency services
- Support users with a disability
- Ensure software updates/revisions to radio maintain compliance

Other differences between R&TTE and RED include having the Declaration of Conformity (DoC) shipped with product or have a short form DoC with website link to full text DoC. The DoC must now include transmit frequency and maximum power.

Future updates include more emphasis on receiver performance and spectrum sharing. In addition starting in June 2018, manufacturers may need to register low level compliance radios and assign a registration number.

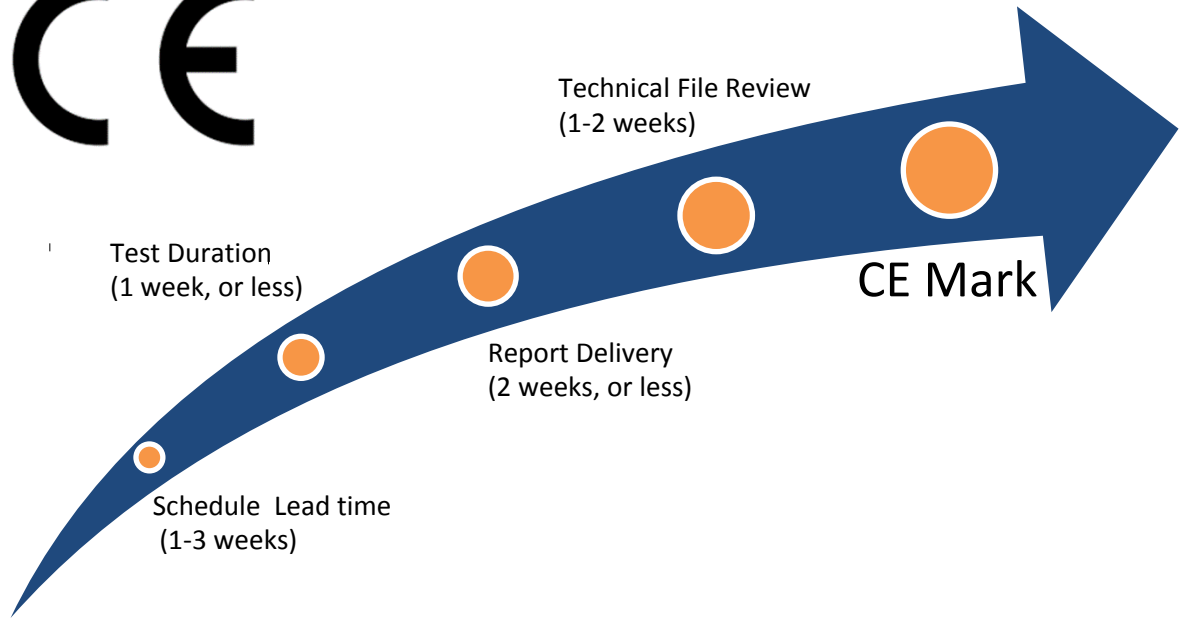
Several other additional requirements will be phased into RED compliance through the compliance requirements in harmonized standards and other separately published regulations and decisions (*see left*).

Manufactures should act now to update their compliance with the new RE Directive. Action Items include:

- Review new directive(s) and comply with changes (especially for broadcast receivers, TTE, Kits)
- Confirm harmonized standards applied for testing are still current and update the DoC to reference the new directive and other compliance details
- Label the product with the CE Mark, manufacturers name/address, product trade name, and batch or serial number
- Include safety Information in a language easily understood by end-users.
- Be familiar with responsibilities of Manufacturer, Importer, Distributor and Authorized Representative

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CE



Time Line



Using this simple guide, a wireless transmitter manufacturer will have a general process to follow for RED conformity assessment.

At Elite, our business is to help clients successfully deploy transmitters and receivers to their destination markets in the shortest time possible.

Our assistance extends beyond this guide with Elite sales and application engineers ready to answer compliance questions and provide the guidance to quickly process a CE Mark.

We also provide services for FCC, Industry Canada, and nearly all markets around the world making the process timely and seamless.

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Wireless device testing and conformity assessment can be a challenging process, but with the support of Elite engineers you can rest assured that you're working with the most knowledgeable, best equipped, and best value service provider in the industry. Contact the following Elite personnel to get your project started on the right path.

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