

# straightpoint

## MANAGEMENT GUIDE

### Global Radio Equipment Standards

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This Management Guide has been compiled to summarise the requirements for exporting Straightpoint products with regard to radio wave emission Standards and approvals.

The information within the guide is only believed to be correct as at the time of publication as global requirements are changing rapidly due to the growing mutual recognition of international Standards.

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## 1. Introduction

### The Radio Spectrum

The Electromagnetic Spectrum is the range of frequencies from less than one Hertz (ELF produced by lightning and natural disturbances in the Earth's magnetic field), up through super low (SLF) and ultra low (ULF) frequencies to radio & microwaves, and then through the visible spectrum to ionizing radiation (x-rays and gamma rays) above 3 PHz (Petahertz – 1 petahertz = 1,000,000 GHz)

#### Electromagnetic Spectrum

Radio & Microwaves													Visible			Ionizing Radiation					
	ELF	SLF	ULF	VLF	LF	MF	HF	VHF	UHF	SHF	EHF	FIR	MIR	NIR	NUV	EUV	SX	HX	y		
Frequency	3	30	300	3	30	300	3	30	300	3	30	300	3	30	300	3	30	300	3	30	300
	Hz			KHz			MHz			GHz			THz			PHz			EHz		

#### Radio Spectrum

The radio spectrum is the part of the electromagnetic spectrum from 3 Hz to 3000 GHz (3 THz). Different parts of the radio spectrum are allocated by the ITU (International Telecommunication Union - a specialized agency of the United Nations (UN) that is responsible for issues that concern information and communication technologies) for different radio transmission technologies and applications; some 40 radio communication services are defined in the ITU's Radio Regulations (RR).

In the UK, the United Kingdom Frequency Allocation Table (UKFAT) details the uses (referred to as 'allocations') to which various frequency bands are put to the UK. It also shows the internationally agreed spectrum allocations of the ITU. The ITU divided the world into three regions. The United Kingdom is within Region 1 which includes Europe, Scandinavia and Africa.

BAND		ITU BAND	Frequency Range	Example Uses
ELF	Extremely Low Frequency	1	3-30Hz	Communication with submarines
SLF	Super Low Frequency	2	30-300Hz	Communication with submarines
ULF	Ultra Low Frequency	3	300Hz–3kHz	Communication with submarines and within mines
VLF	Very Low Frequency	4	3-30kHz	Navigation, time signals, submarine communication, wireless heart rate monitors, geophysics
LF	Low Frequency	5	30-300kHz	Navigation, time signals, AM longwave broadcasting (Europe and parts of Asia), RFID, amateur radio
MF	Medium Frequency	6	300kHz-3MHz	AM (medium-wave) broadcasts, amateur radio, avalanche beacons
HF	High Frequency	7	3-30MHz	Shortwave broadcasts, citizens band radio, amateur radio and over-the-horizon aviation communications, RFID, over-the-horizon radar, automatic link establishment (ALE) / near-vertical incidence skywave (NVIS) radio communications, marine and mobile radio telephony
VHF	Very High Frequency	8	30-300MHz	FM, television broadcasts, line-of-sight ground-to-aircraft and aircraft-to-aircraft communications, land mobile and maritime mobile communications, amateur radio, weather radio
UHF	Ultra High Frequency	9	300MHz-3GHz	Television broadcasts, microwave oven, microwave devices/communications, radio astronomy, mobile phones, wireless LAN, Bluetooth, ZigBee, GPS and two-way radios such as land mobile, FRS and GMRS radios, amateur radio, satellite radio, Remote control Systems, ADSB
SHF	Super High Frequency	10	3-30GHz	Radio astronomy, microwave devices/communications, wireless LAN, DSRC, most modern radars, communications satellites, cable and satellite television broadcasting, DBS, amateur radio, satellite radio
EHF	Extremely High Frequency	11	30-300GHz	Radio astronomy, high-frequency microwave radio relay, microwave remote sensing, amateur radio, directed-energy weapon, millimetre wave scanner
THF	Tremendously High Frequency	12	300GHz-3THz	Experimental medical imaging to replace X-rays, ultrafast molecular dynamics, condensed-matter physics, terahertz time-domain spectroscopy, terahertz computing/communications, remote sensing, amateur radio

## Radio Equipment

The EU Radio Equipment Directive (RED) 2014/53/EU defines “Radio Equipment” as any product using the radio spectrum.

This includes mobile (GSM or CDMA) handsets, wireless LAN (WLAN) equipment such as Wi-Fi devices, Bluetooth devices, Zigbee devices, WiMAX devices, RFID equipment, contactless card readers, and a whole host of other products that incorporate some kind of RF transmitter.

There are exceptions relating radio kits and equipment used by radio amateurs, as well as certain marine equipment and airborne products.

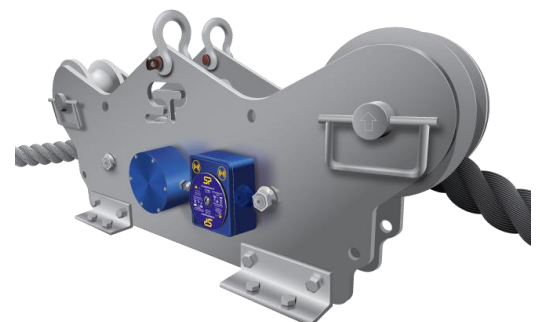
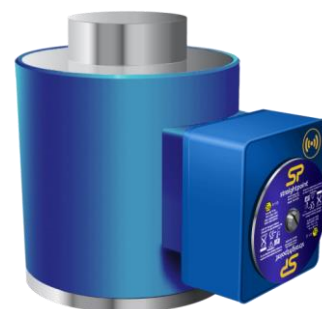
## Straightpoint Wireless Products

Straightpoint wireless products currently incorporate 2.4 GHz direct sequence spread spectrum (DSSS) radio technology (IEEE 802.15.4) which offers high integrity, error free communications that can co-exist with other wireless technologies such as Wi-Fi, Bluetooth® and Zigbee®.

IEEE 802.15.4 is a technical standard which defines the operation of low-rate wireless personal area networks (LR-WPANS). It specifies the physical layer and media access control for LR-WPANS, and is maintained by the IEEE 802.15 working group, which defined the standard in 2003. It is the basis for the ZigBee, ISA100.11a, WirelessHART, MiWi, SNAP, and Thread specifications, each of which further extends the standard by developing the upper layers which are not defined in IEEE 802.15.4. Alternatively, it can be used with 6LoWPAN, the technology used to deliver the IPv6 version of the Internet Protocol (IP) over WPANS, to define the upper layers.



- Radiolink Plus
- Wireless Loadshackle
- Wireless Compression Load Cell
- Wireless Low Headroom Load Cell
- StageSafe
- Towcell
- Wireless Linear Transducer
- Wireless Transmitter SA700C
- Running Line Tensiometer TIMH





## 2. Global Radio Equipment Standards

### General

Dependent upon equipment specifications, i.e. operating voltage, frequency and transmission power, there may be differing global requirements for Straightpoint products to meet standards regarding:

- Low voltage safety;
- Electromagnetic Compatibility (EMC) – emission of unwanted electromagnetic pollution (interference) and immunity to interference;
- Radio wave emissions and susceptibility;
- Other safety requirements.

Requirements vary globally dependent upon country/region and the level of mutual recognition of Standards and the competence of national Certification Bodies.

For the European Union, currently including the UK, Straightpoint wireless products cannot be placed on the market in any EU member state without compliance the requirements of:

#### **The EU Low Voltage Directive (LVD) 2014/35/EU**

The LVD covers all health and safety risks of electrical equipment operating with a voltage between 50 and 1000 V for alternating current and between 75 and 1500 V for direct current. These voltage ratings refer to the voltage of the electrical input or output, not to voltages that may appear inside the equipment.

#### **The EU Electromagnetic Directive (EMC) 2014/30/EU**

The EMC Directive ensures that electrical and electronic equipment does not generate, or is not affected by, electromagnetic disturbance.

The Directive limits electromagnetic emissions from equipment in order to ensure that, when used as intended, such equipment does not disturb radio and telecommunication, as well as other equipment. The Directive also governs the immunity of such equipment to interference and seeks to ensure that this equipment is not disturbed by radio emissions, when used as intended.

Most communications apparatus is excluded from the scope of the EMC Directive, either wholly or in part, but instead comes under the scope of the Radio Equipment Directive.

#### **The EU Radio Equipment Directive (RED) 2014/53/EU**

The RED replaced the previous R&TTE Directive (1999/5/EC) fully from the 13<sup>th</sup> of June 2017. The Directive requires equipment to be constructed for efficient use of the radio spectrum, as well as electromagnetic compatibility, to avoid interference with terrestrial and orbital communications.

Equipment that might have fallen outside the scope of the Low Voltage Directive because their operational voltage is less than 50 VAC or 75 VDC, now have to comply with the requirements of the Low Voltage Directive if they fall under scope of the Radio Equipment Directive.

Compliance with the EU Directives has to be demonstrated by EU Certificates of Conformity under the CE Marking Scheme.

In North America, requirements and Standards are regulated by the Federal Communications Commission (FCC).

Electrical equipment marketed in the USA requires authorization. There are three main levels of evidence required according to the risk of interference that the type of equipment possesses. For Straightpoint products, Certificates of Conformity to FCC requirements are applicable to verify compliance with Part 15 of the FCC Rules regarding radio equipment.

Straightpoint wireless products use are currently approved to EU CE and FCC requirements as outlined above, as well as to Canadian ISED and Japanese SRE approvals. Radio approvals are currently adopted from the approvals of the third party RF modules and circuitry employed within the products.

At the time of publication of this document, there are a number of global regions and countries that require different approvals to differing standards before electronic products emitting radio waves are allowed to be imported. These Standards and approvals are summarised in the table on the following page. This is based upon best available information at the time of publication and may change due to the increasing mutual recognition arrangements and changes to national arrangements for product approvals.











# Global Radio Equipment Standards

## Summary of Global Standards & Approvals

Region/Country	Standard(s)	Approval	
European Union (EU): Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.	The EU Radio Equipment Directive (RED) 2014/53/EU; The EU Electromagnetic Directive (EMC) 2014/30/EU; The EU Low Voltage Directive (LVD) 2014/35/EU Restriction of Hazardous Substances Directive (RoHS) 2011/65/EU Based upon applicable harmonised Standards	CE Type Approval	
European Free Trade Association (EFTA): Iceland, Liechtenstein, Norway.	As for European Union	CE Type Approval	
Turkey	As for European Union, subject to further clarification and confirmation – radio may need in country approval by ICTA (Information & Communications Technologies Authority).	CE Type Approval for EMC and LVD. ICTA approval for radio	
North America	Part 15 of Federal Communications Commission (FCC) Rules Part 15.	FCC Approval	
Canada	Canadian Radio Standards Specifications (RSS)	ISED (Innovation, Science & Economic Development) Approval	
Australia	ACMA AS/NZS Standards relating to RF equipment and EMC	RCM Approval	
New Zealand	ACMA AS/NZS Standards relating to RF equipment and EMC	RCM Approval	
China	Guobiao (GB) Standards relating to RF equipment and EMC	CCC Approval by CNCA	
Japan	Japanese Radio Law (JRF) and Japanese Business Law (JPA) No EMC requirement in Japan	SRE (Specialised Radio Equipment) Approval	
Singapore	FCC and RED Standards	IDA Approval Infocom Development Authority of Singapore	
Hong Kong	HKCA (Hong Kong specifications) FCC or RED accepted	Approval by OFTA (Office of the Telecommunications Authority of Hong Kong) accredited Body to HKCA specifications. Or foreign CBs designated by EU or FCC	
India	Indian BIS Standards – identical to IEC Standards. (Bureau of Indian Standards). Local Representative required	Approval by the Wireless Planning and Coordination (WPC) wing of the Ministry of Communications of the government of India	
Russia, Belarus and Kazakhstan	Federal Law - TR Regulations	RFC Statement (Radio Frequency Compliance) EAC Approval (Eurasian Customs Union)	
Brazil	Brazilian Resolutions based on the international CISPR 22 and CISPR 24 standards, with EMC requirements similar to the CE Mark in the EU.	Inmetro/Anatel Approval.	

Region/Country	Standard(s)	Approval	
Mexico	No EMC requirements IEC EMI/EMC Standards. Accepts FCC grants and test reports or EU RED Directive reports and CE CoCs	IFT Approval	
Korea	Korean EMI and EMC KN Standards	KC(RF+EMC) Approval by CBs approved by the KSA (Korean Standards Association)	
South Africa	IEC EMI/EMC Standards. Accepts FCC grants and test reports or EU RED Directive reports and CE CoCs Need local representative	Approval by SABS (South African Bureau of Standards) or ICASA (Independent Communications Authority of South Africa).	
Nigeria	IEC, ITU-T, ETSI, CCIR and other International Standards for radio. No EMC requirement Accept EU CoCs	SONCAP/NCC Approval by an IAF  (Standards Organisation of Nigeria Conformity Assessment Program)  (International Accreditation Forum –see separate section)	
Democratic Republic of the Congo:	Accepts FCC grants and test reports or EU RED Directive reports and CE CoCs	CPTA Approval  (Congolese Post and Telecommunications Agency)	
Kenya	No EMC requirement Accepts EU RED Directive reports for radio	CCK Approval  (Communications Commission of Kenya)	
Cameroon	No EMC requirements Need local representative	MPT in country approval for radio  (Ministry of Post & Telecommunications)	
Burkina Faso	No EMC Requirements	METC in country approval for radio  (Ministere de L'Equipment, des Trabsorts et des communications)	
Botswana	Uncertain	BOCRA Type Approval  (Botswana Communications Regulatory Authority)	
Egypt	Has compliance requirements for EMC, health and safety, wireless, and telecom. Accepts EU RED Directive reports and CE CofCs	NTRA Approval  (National Telecommunication Regulatory Authority)	
Ethiopia	Accepts FCC grants and test reports or EU RED Directive reports and CE CofCs	CofC by CB approved by Ethiopia Ministry of Trade	
Israel	IEC Standards MOE (Ministry of Economy) Rules SII (Standards Institute of Israel) Standards EU EMC CofCs may be accepted.	SII Approval	
Saudi Arabia	IEC Standards Accepts FCC grants and test reports or EU RED Directive reports and CE CofCs.	CITC Approval  (Communications and Information Technology Commission)  SASO Approval	



Region/Country	Standard(s)	Approval	
United Arab Emirates (UAE)	IEC Standards Accepts FCC grants and test reports or EU RED Directive reports and CE CofCs.	TRA Approval (Telecommunications Regulatory Authority)	
Algeria	Algerian IANOR Standards (Institut Algérien de Normalisation)	ARPT Approval (Algeria Regulation Authority of Post & Telecommunications)	
Iraq	Accepts EU RED Directive reports and CE CofCs.	CMC Approval (Communications & Media Commission)	
Lebanon	IEC Standards Accepts EU RED Directive reports and CE CofCs.	TRA Approval (Telecommunications Regulatory Authority)	
Jordan	IEC Standards Accepts EU RED Directive reports and CE CofCs.	TRC Approval (Telecommunications Regulatory Commission)	
Kuwait	IEC Standards Accepts EU RED Directive reports and CE CofCs.	MOC Approval through CITRA (Ministry of Communications)	
Bahrain	IEC Standards Accepts EU RED Directive reports and CE CofCs.	TRA Approval (Telecommunications Regulatory Authority)	
Qatar	IEC Standards Accepts EU RED Directive reports and CE CofCs.	ICT Approval (Ministry of Information & Communications Technology)	
Yemen	IEC Standards Accepts EU RED Directive reports and CE CofCs.	MTIT Approval (Ministry of Telecommunications & Information Technology)	
Oman	IEC Standards Accepts EU RED Directive reports and CE CofCs.	TRA Approval (Telecommunications Regulatory Authority)	

## NOTE:

Where countries and their regulators are indicated as accepting FCC grants/test reports and or CE Reports/CofCs, this does not necessarily mean that there is no additional approval process or testing of samples. Therefore, there may be time and cost implications in order to gain the necessary approvals and import qualifications.

It is recommended that further investigation is carried out prior to marketing/exporting to specific countries in order to clarify the most up to date requirements.

## Mutual Recognition Agreements

A mutual recognition agreement (MRA) is an international agreement by which two or more countries agree to recognize one another's conformity assessments. A mutual recognition arrangement is an international arrangement based on such an agreement.

The purpose of the MRA is to expedite the trade of telecommunications equipment. Most countries used to, and some still do, required imported or locally produced electronic radio equipment to be tested and certified within their own territories. With the globalization of trade in this type of equipment, exporters consider it redundant to conduct conformity assessment in the importing country since these assessments have already been done in the exporting country as part of the testing and production processes. The WTO considers the requirement for conformity assessment in both the importing and exporting country to be a technical barrier to trade.

MRAs address this problem by enabling the participating countries to mutually recognize the competence of each other's testing laboratories and certification bodies and subsequently, mutually accept the conformity assessment results (test reports and certification). This expedites the approval process and results in faster times to market and savings to the manufacturer in regulatory compliance costs.

Mutual recognition agreements lay down the conditions under which one Party (non-member country) will accept conformity assessment results (e.g. testing or certification) performed by the other's Party (the EU) designated conformity assessment bodies (CABs) to show compliance with the first Party's (non-member country) requirements and vice versa. This allows EU CABs to become CBs for other country schemes

MRAs include relevant lists of designated laboratories, inspection bodies and conformity assessment bodies in both the EU and the rest of the world. There are MRAs in place with Australia, Canada, Japan, New Zealand, North America, and Israel.

## The International Accreditation Forum (IAF)



The International Accreditation Forum (IAF) is the world association of Conformity Assessment Accreditation Bodies. Its main function is to develop a world-wide program of conformity assessment which will promote the elimination of non-tariff barriers to trade. IAF membership includes accreditation bodies from all parts of the world, industry representatives and accredited certification bodies.

IAF's objectives include facilitating trade and commerce, in accordance with World Trade Organisation policies, by establishing a Multilateral Mutual Recognition Arrangement (MLA) based on the equivalence of accreditation programmes operated by accreditation body members, verified through peer review among those accreditation body members.

UKAS is a signatory to the following main scopes:

Management system certification - ISO/IEC 17021  
Product certification - ISO/IEC 17065 - 09 Oct 2004  
Certification of Persons - ISO/IEC 17024

## GCC Conformity Mark (G-Mark)

G Mark is now a requirement for a number of low voltage electrical products and children's toys being exported to Gulf Standardization Organization (GSO) member countries as defined within the Low Voltage Technical Regulation, BD142004-01.

The G-Mark is a specific marking of the GCC countries which is affixed on the product to indicate that the product is in conformity with the requirements set out in the applicable Gulf Technical Regulations.

The countries, currently part of the scheme, include:

Kuwait  
Bahrain  
Oman  
Qatar  
Saudi Arabia (KSA)  
Yemen  
United Arab Emirates (UAE).



G-marking includes requirements for EMC but these may be overridden by radio requirements. Further investigation is recommended regarding Straightpoint products for export to these areas.