IEEE P802.11
Wireless LANs

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| RLAN and UWB Regulatory Status |
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Abstract

R0: mid-September 2018 Regulatory status of RLAN and UWB radio devices in mid-bands in ITU-R Radio Regulations, European Radio Regulations and FCC Radio Regulations.

[i.10] ITU-R Radio Regulations

Here are some references to the ITU-R Spectrum Management framework for UWB regulations: [i.11] SM.1756 Framework for the introduction of devices using ultra-wideband technology and [i.12] SM.1757 Impact of devices using ultra-wideband technology on systems operating within radio communications services.

<https://www.itu.int/rec/R-REC-SM/en>

[https://www.itu.int/dms\_pubrec/itu-r/rec/sm/R-REC-SM.1756-0-200605-I!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.1756-0-200605-I%21%21PDF-E.pdf)

*recommends*

**1** that the framework contained in Annex 1 to this Recommendation should be used as a guide by administrations when considering the introduction of devices using UWB technology and their impact on radiocommunication services;

**2** that the following Notes will be considered as part of this Recommendation.

NOTE 1 – Administrations authorizing or licensing devices using UWB technology should ensure, pursuant to the provisions of the RR, that these devices do not cause interference to and do not claim protection from, or place constraints on, the radiocommunication services of other administrations as defined in the RR and operating in accordance with those Regulations.

NOTE 2 – Upon receipt of a notice of interference to the radiocommunication services referred to in Note 1, above, from devices using UWB technology, administrations should take immediate action(s) to eliminate such interference.

SM.1757 Impact of devices using ultra-wideband technology on systems operating within radio communications services [https://www.itu.int/dms\_pubrec/itu-r/rec/sm/R-REC-SM.1757-0-200605-I!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.1757-0-200605-I%21%21PDF-E.pdf)

In ITU-R Radio Regulations, devices using UWB technology are the only ones with such complete requirements to ensure such devices do not cause interference or place constraints on the radiocommunication services of other administrations.

[i.13] ERC Report 25 European Table of Frequency Allocations and Applications

[4 **ECC/ERC DECISIONS AND RECOMMENDATIONS**]

**Underlay regulations**

Underlay regulations by contrast do not "designate" a specific frequency band for a certain usage but rather

define conditions of use of the radio spectrum across a relatively wide frequency range. The intentional

emissions of underlay applications are not always limited to the boundaries of a specific frequency band,

which implies that in some cases underlay regulations cannot be referenced conveniently in a frequency

allocation table.

Regulations developed within CEPT for applications using Ultra-Wideband (UWB) technology typically fit

within this regulatory approach.

ECC WG FM meets September 24-28, 2018 and the agenda includes discussion and approval of the updated ERC Report 25.

[i.14] WGFM (18)126 updated European Common Allocation:

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| Proposal: |
| 1. EFIS/MG is requested to discuss the comments received during public consultation and make a proposal to WGFM#92;
2. WGFM#92 is requested to approve the draft revised ERC Report 25 for publication. Publication to take place after the ECC meeting in October 2018.
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The ECA document when published will show ECA Allocation to MOBILE in the frequency ranges 5925-6700 MHz as a primary service [i.17]. Within the MOBILE service, Wireless Access Systems and Radio Local Area Networks (WAS/RLANs) are intended to cover smaller geographic areas like homes, offices and to a certain extent buildings being adjacent to each other. Radio LANs are also known as Wireless LANs (WLANs) and Wideband Data Transmission Systems. RLANs are co-primary in regulatory domains that permit WAS/RLANs as part of the MOBILE service. RLANs are co-primary in regulatory domains that permit Broadband Fixed Wireless Access (BFWA) using RLAN devices. RLAN devices are regulated as an underlay technology in bands where they provide no radio communications services.

The ERC Report 25 text for bands of interest:

***RR Region 1 Allocation and RR European Common Allocation and ECA ECC/ERC Applications Standard Notes***

***footnotes applicable to CEPT Footnotes harmonisation***

***measure***

**5470 - 5570 MHz**

EARTH EXPLORATION-SATELLITE EARTH EXPLORATION-SATELLITE Active sensors (satellite)

(active) (active)

MARITIME RADIONAVIGATION MARITIME RADIONAVIGATION Radiolocation (military)

MOBILE except aeronautical mobile MOBILE except aeronautical mobile - Position fixing

5.446A 5.450A 5.446A 5.450A

RADIOLOCATION 5.450B RADIOLOCATION 5.450B ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

SPACE RESEARCH (active) SPACE RESEARCH (active) TLPR application

5.448B .448B ECA22 Maritime radar Shipborne and VTS radar

5.450 ECA36

5.451 ECC/DEC/(04)08 Radio LANs EN 301 893 WAS/RLANs within the bands 5150-

 ERC/REC 70-03 5350 MHz and 5470-5725 MHz

 Weather radars Ground based and airborne

***RR Region 1 Allocation and RR European Common Allocation and ECA ECC/ERC Applications Standard Notes***

***footnotes applicable to CEPT Footnotes harmonisation***

***measure***

**5570 - 5650 MHz**

 MARITIME RADIONAVIGATION MARITIME RADIONAVIGATION Radiolocation (military)

 MOBILE except aeronautical mobile MOBILE except aeronautical mobile

 5.446A 5.450A 5.446A 5.450A Position fixing

 RADIOLOCATION 5.450B RADIOLOCATION 5.450B ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

 TLPR application

 5.450 5.452 ECA22

 5.451 ECA36 Maritime radar Shipborne and VTS radar

 5.452

 ECC/DEC/(04)08 Radio LANs EN 301 893 WAS/RLANs within the bands 5150-

 ERC/REC 70-03 5350 MHz and 5470-5725 MHz

 Weather radars Ground based

 **5650 - 5725 MHz**

MOBILE except aeronautical mobile MOBILE except aeronautical mobile Amateur EN 301 783 Within the band 5650-5850 MHz

5.446A 5.450A 5.446A 5.450A

RADIOLOCATION RADIOLOCATION Amateur-satellite Within the band 5650-5670 MHz

Amateur Amateur Radiolocation (military)

Space research (deep space) Amateur-satellite (E/S) Maritime radar Shipborne and VTS radar

5.282 5.282 - Position fixing

5.451 ECA22 ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

5.453 ECA23 TLPR application

5.454 ECA36 ECC/DEC/(04)08 Radio LANs EN 301 893 WAS/RLANs within the bands 5150-5350 MHz
5.455 ERC/REC 70-03 and 5470-5725 MHz

 Weather radars Ground based and airborne

**5725 - 5830 MHz**

FIXED-SATELLITE (E/S) FIXED-SATELLITE (E/S) Amateur EN 301 783 Within the band 5650-5850 MHz

RADIOLOCATION RADIOLOCATION ECC/REC/(06)04 BFWA EN 302 502 Within the band 5725-5875 MHz

 Fixed Radiolocation (military)

Amateur Amateur ISM Within the band 5725-5875 MHz

 Mobile ERC/REC 70-03 Non-Specific SRDs EN 300 440 Within the band 5725-5875 MHz

5.150 5.150 ECA22 ERC/REC 70-03 WIA Within the band 5725-5875 MHz

5.451 ECA36 Weather radars Ground based and airborne

5.453 ECA17 ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

5.455 TLPR application

 ERC/REC 70-03 TTT EN 300 674 Within the band 5795-5805 MHz.

 TTT in the band 5805-5815 MHz on a

 national basis

 **5830 - 5850 MHz**

FIXED-SATELLITE (E/S) FIXED-SATELLITE (E/S) Amateur EN 301 783 Within the band 5650-5850 MHz

RADIOLOCATION RADIOLOCATION Amateur-Satellite Within the band 5830-5850 MHz

 Fixed ECC/REC/(06)04 BFWA EN 302 502 Within the band 5725-5875 MHz

 Amateur Amateur Radiolocation (military)

 Amateur-satellite (S/E) Amateur-satellite (S/E) ISM Within the band 5725-5875 MHz

 Mobile ERC/REC 70-03 Non-Specific SRDs EN 300 440 Within the band 5725-5875 MHz

 5.150 5.150 ECA22 ERC/REC 70-03 WIA EN 303 258 Within the band 5725-5875 MHz

 5.451 ECA23 ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for TLPR
 5.453 ECA36 TLPR application

 5.455 Weather radars Ground based and airborne

 **5850 - 5925 MHz**

FIXED FIXED ECC/REC/(06)04 BFWA EN 302 502 Within the band 5725-5875 MHz

FIXED-SATELLITE (E/S) FIXED-SATELLITE (E/S) ECC/DEC/(15)03 DA2GC EN 303 339 Within the band 5855-5875 MHz

 EN 303 316

MOBILE MOBILE FSS Earth stations EN 301 443 Priority for civil networks

5.150 5.150 ISM Within the band 5725-5875 MHz

 ECC/DEC/(08)01 ITS EN 302 571 Within the bands 5875-5925 MHz and

 ECC/REC/(08)01 5855-5875 MHz. Traffic safety applications

 ERC/REC 70-03 within the band 5875-5905 MHz

 ERC/REC 70-03 Non-Specific SRDs EN 300 440 Within the band 5725-5875 MHz

 ERC/REC 70-03 WIA EN 303 258 Within the band 5725-5875 MHz

 ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

 TLPR application

 ECC/REC/(17)03 MBR EN 303 276 Within 5852-5872 MHz and 5880-5900 MHz

 **5925 - 6700 MHz**

FIXED 5.457 FIXED ERC/REC 14-02 Fixed EN 302 217 Point-to-point

 ECC/REC/(14)06

 ERC/REC 14-01

FIXED-SATELLITE (E/S) 5.457A 5.457B FIXED-SATELLITE (E/S) ECC/DEC/(05)09 ESV EN 301 447 Within the band 5925-6425 MHz

MOBILE 5.457C Earth exploration-satellite (passive) FSS Earth stations EN 301 443 Priority for civil networks

5.149 5.149 Passive sensors (satellite) For sea surface temperature, sea

5.440 5.440 surface wind speed and soil moisture

5.458 5.458 measurements

 ERC/REC 70-03 Radiodetermination applications EN 302 372 Within the band 4500-7000 MHz for

 MOBILE ECC/DEC/(11)02 EN 302 729 TLPR application within the band

 6000-8500 MHz for LPR applications

 ECC/DEC/(06)04 UWB applications EN 302 065 Generic UWB. On-board aircraft

 ECC/DEC/(12)03 regulation within the band 6.0-8.5 GHz

 Radio astronomy Spectral line observations.

 (e.g. methanol line), VLBI

In US regulations, Part 15 is the section defining obligations of radio devices that do not provide radiocommunication services.

FCC 15.3 Harmful interference. Any emission, radiation or induction that endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunications service operating in accordance with this chapter.

FCC 15.5 (b) [Operation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=ec0f841baebb6ddab3bb9ff7e69ad5e9&term_occur=2&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5) of an intentional, unintentional, or [incidental radiator](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=2b03859de420ca18122cf7d7c7dc3306&term_occur=1&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5) is subject to the conditions that no [harmful interference](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=5d78fa6c752a5326f26a026c51cd5136&term_occur=1&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5) is caused and that interference must be accepted that may be caused by the [operation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=ec0f841baebb6ddab3bb9ff7e69ad5e9&term_occur=3&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5) of an authorized radio station, by another intentional or [unintentional radiator](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=a84d62f89f190b01547e414fd496e3df&term_occur=2&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5), by industrial, scientific and medical (ISM) equipment, or by an [incidental radiator](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=2b03859de420ca18122cf7d7c7dc3306&term_occur=2&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:A:15.5).

[i.2] 15.250 is for wideband systems operating in 5925-7250 MHz band with the −10 dB bandwidth of the fundamental emission shall be at least 50 MHz.

[i.3] Part 15 Subpart E is for unlicensed National Information Infrastructure (U-NII) devices operating in the 5.15-5.35 GHz, 5.47-5.725 GHz and 5.725-5.85 GHz bands.

[i.4] Part 15 Subpart F is for unlicensed ultra-wideband transmission systems. An ultra-wideband transmitter is defined as an [intentional radiator](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=0c0226635893fadbb42464e39b115821&term_occur=1&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:F:15.503) that, at any point in time, has a [fractional bandwidth](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=1a0a969ae7ec2b0c177234673f43d134&term_occur=2&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:F:15.503) equal to or greater than 0.20 or has a [UWB bandwidth](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=64a02f34e67a3a551f3845bcf4db31bf&term_occur=2&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:F:15.503) equal to or greater than 500 MHz, regardless of the [fractional bandwidth](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=1a0a969ae7ec2b0c177234673f43d134&term_occur=3&term_src=Title:47:Chapter:I:Subchapter:A:Part:15:Subpart:F:15.503).

IEEE 802.19 document 19-18/0017 presents a review of UWB frequency bands of interest in slides 4-5.



**References:**

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.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.

[i.2] 47 C.F.R. Part 15, 15.250 wideband operation

[i.3] 47 C.F.R. Part 15, Subpart E Unlicensed National Information Infrastructure

[i.4] 47 C.F.R Part 15, Subpart F Ultra-Wideband Operation

[i.5] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

[i.6] ETSI EG 203 367 (V1.1.1) (06-2016): "Guide to the application of harmonised standards covering articles 3.1b and 3.2 of the Directive 2014/53/EU (RED) to multi-radio and combined radio and non-radio equipment".

[i.7] ECC/DEC/(04)08: "ECC Decision of 9 July 2004 on the harmonised use of the 5 GHz frequency bands for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs) (30/10/2009)".

[i.8] Commission Decision 2005/513/EC of 11 July 2005 on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).

[i.9] Commission Decision 2007/90/EC of 12 February 2007 amending Decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).

[i.10] ITU-R Radio Regulations, Articles, Edition of 2016: <https://www.itu.int/pub/R-REG-RR>

[i.11] ITU-R Recommendation SM.1756 Framework for the introduction of devices using ultra-wideband technology [https://www.itu.int/dms\_pubrec/itu-r/rec/sm/R-REC-SM.1756-0-200605-I!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.1756-0-200605-I%21%21PDF-E.pdf)

[i.12] ITU-R Recommendatio SM.1757 Impact of devices using ultra-wideband technology on systems operating within radio communications services [https://www.itu.int/dms\_pubrec/itu-r/rec/sm/R-REC-SM.1757-0-200605-I!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.1757-0-200605-I%21%21PDF-E.pdf)

[i.13] ERC Report 25 European Common Allocation: <http://www.efis.dk/sitecontent.jsp?sitecontent=ecatable>

[i.14] ECC WG FM updated European Common Allocation: <https://cept.org/Documents/wg-fm/45804/fm-18-126_pc-results-for-draft-revised-erc-report-25-eca-table>

[i.15] ECO Frequency Information System: <http://www.efis.dk/>

[i.16] EC Decision 2007/344/EC: “on harmonised availability of information regarding spectrum use within the Community”

[i.17] WG FM57(18)006 Regulatory Status of UWB

 <https://cept.org/Documents/fm-57/45556/fm57-18-006_regulatory-status-of-uwb>