



# CEPT Report **75**

Report from CEPT to the European Commission in response to the Mandate

“to study feasibility and identify harmonised technical conditions for Wireless Access Systems including Radio Local Area Networks in the 5925-6425 MHz band for the provision of wireless broadband services”

Report B: Harmonised technical parameters for WAS/RLANs operating on a coexistence basis with appropriate mitigation techniques and/or operational compatibility/coexistence conditions, operating on the basis of a general authorisation.

**Report approved on 20 November 2020 by the ECC**

## 0 EXECUTIVE SUMMARY

This CEPT Report contains technical conditions for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the 5945-6425 MHz band. This is in response to Task 2 of the Mandate from the European Commission (EC) to CEPT (see Annex 2).

The recommended framework distinguishes the following use cases for use by WAS/RLAN in the 5945-6425 MHz frequency band:

- Low power indoor (LPI) use, max 200 mW e.i.r.p., with no outdoor use allowed;
- Very low power (VLP) portable use, max 25 mW e.i.r.p., that may operate both indoor and outdoor.

CEPT considered in its investigations the possible use of the 5925-6425 MHz band for the provision of wireless broadband services. However, in the course of the technical considerations, it was proposed that WAS/RLAN transmissions should be constrained to above 5945 MHz to take into account operations of Urban Rail Intelligent Transport Systems (ITS).

According to the studies conducted, CEPT concludes that coexistence between WAS/RLAN operating in the 5945-6425 MHz band and existing services and systems within the band and in adjacent bands would be technically feasible under the generic technical conditions detailed in Annex 1.

It should be noted that the -45 dBm/MHz OOB limit below 5935 MHz for VLP would allow VLP initial market to take up. CEPT also agreed that this OOB limit should be valid in time only until 31 December 2024 and be re-examined with regard to an opportunity to relax it based on the real IEEE and DSSS Urban Rail interference situation. In absence of the justified evidence, a value of -37 dBm/MHz, for the OOB limit below 5935 MHz, will be adopted from 01/01/2025.

In addition, to maintain the protection of point-to-point FS, national administrations should consider an effective enforcement of the indoor restriction for LPI.

WAS/RLAN use under these conditions is expected to be exempt from individual licensing. The harmonisation on an EU basis would support EU Directive 2014/53/EU [3] of the European Parliament and of the Council of 16 April 2014 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity. Additionally, CEPT has developed a ECC Decision (20)01 to foster wider regional harmonisation of the use of the frequency band 5945-6425 MHz by WAS/RLAN devices.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Explanation</b>
<b>AP</b>	Access Point
<b>CBTC</b>	Communication-based train control
<b>CEPT</b>	European Conference of Postal and Telecommunications Administrations
<b>EC</b>	European Commission
<b>ECC</b>	Electronic Communications Committee
<b>e.i.r.p.</b>	Effective isotropic radiated power
<b>ETSI</b>	European Telecommunications Standards Institute
<b>EU</b>	European Union
<b>FS</b>	Fixed Service
<b>FSS</b>	Fixed-Satellite Service
<b>ISM</b>	Industrial, Scientific and Medical
<b>ITS</b>	Intelligent Transport System
<b>ITU-R</b>	International Telecommunication Union, Radiocommunication Sector
<b>LPI</b>	Low Power Indoor
<b>MWA</b>	Mobile Wireless Access
<b>NWA</b>	Nomadic Wireless Access
<b>OoB</b>	Out-of-band
<b>RAS</b>	Radio Astronomy Service
<b>RLAN</b>	Radio Local Area Network
<b>UWB</b>	Ultra-Wideband
<b>VLP</b>	Very Low Power
<b>WAS</b>	Wireless Access System

## 1 INTRODUCTION

This CEPT Report addresses the possible designation of the frequency band 5925-6425 MHz for the implementation of Wireless Access Systems (WAS) including Radio Local Area Networks (RLAN). This is in accordance with Task 2 of the EC Mandate to CEPT (see Annex 2).

This frequency band has been allocated to the mobile service, the fixed service and the fixed-satellite service on a primary basis in all three regions by ITU-R Radio Regulations.

Wireless Access Systems are broadband radio systems which can be deployed either inside or outside buildings, usually in geographically limited areas. Broadband RLAN, a subset of WAS, are the major type of equipment deployed today and are predominantly used inside buildings. Typical WAS/RLAN include public and private applications offered in homes, schools, hospitals, hotels, conference centres, railway stations, airports, shopping centres, offices, factories etc. These types of applications may thus be considered to fall into the ITU-R categories nomadic wireless access (NWA) or mobile wireless access (MWA) [10]. They are typically intended for connections between traditional business products such as PC, laptops, workstations, servers, printers and other networking equipment as well as digital consumer electronic equipment in the wireless home network environment. WAS/RLAN thus remove the need for physical connection of the above devices. WAS/RLAN utilise low power levels because of the short distance nature of inside building operation. Most of the existing WAS/RLAN and similar broadband data transmission systems are currently operating in the ISM frequency bands. In order to ensure high reliability and higher data transfer rates for WAS/RLAN, however, a more predictable sharing environment is required. Therefore, other frequency bands have been identified which are more suitable than the ISM bands for WAS/RLAN. More detailed Information regarding broadband WAS/RLAN applications which are used worldwide can be found in Recommendation ITU-R M.1450 [4].

ECC Report 302 [1] studied the coexistence scenarios between WAS/RLAN and the incumbent usages: Fixed Service (FS), Fixed-Satellite Service (FSS), Radio astronomy (RAS) and Ultra-Wideband (UWB), as well as Road and Urban Rail Intelligent Transport Systems (ITS). The results of these studies were summarised in CEPT Report 73 [2] to the EC in response to Task 1 of the Mandate. In addition ECC Report 316 [6] studied the short-term interference protection of Point-to-Point FS from WAS/RLAN indoor only deployments as well as from WAS/RLAN portable devices that operate outdoor with power levels significantly lower than that for indoor use. CEPT performed complementary studies in parallel with the public consultation on this Report in order to further assess the in-band Power Spectral Density (PSD) for VLP devices and out-of-band emission limits below 5935 MHz for LPI and VLP devices.

## 2 DETERMINATION OF WAS/RLAN USE CASES

The following use cases were identified for use by WAS/RLAN in the band 5925-6425 MHz:

- Low power indoor (LPI) use, maximum mean<sup>1</sup> 200 mW e.i.r.p., with no outdoor use allowed;
- Very low power (VLP) portable use, maximum mean<sup>1</sup> 25 mW e.i.r.p., VLP devices may operate both indoor and outdoor.

Those systems can be described by two common configurations: centralised systems, where multiple devices are connecting to an access point (AP), and non-centralised systems, where multiple devices communicate directly in a small area on an ad-hoc basis.

LPI use is intended to be permanent in buildings, in aircraft or in trains. In general, the outdoor use of the frequency band is restricted to the VLP usage because of the protection requirements of other radio services. The VLP outdoor use is intended to cover short range applications for small area direct communications. CEPT studies and resulting use cases are also being considered in the development of European standard draft ETSI EN 303 687 [5].

Consideration of use cases with powers higher than those described in this Report including for outdoor use would require further investigations.

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<sup>1</sup> The "mean e.i.r.p." refers to the e.i.r.p. during the transmission burst, which corresponds to the highest power, if power control is implemented.

### 3 REVIEW OF COEXISTENCE ISSUES

The results of the sharing and compatibility studies performed within CEPT, which can be found in ECC Report 302 [1], were used as the basis for the response to the EC Mandate on 6 GHz WAS/RLAN in CEPT Report 73 [2].

Complementary technical studies and analyses have been performed as part of the work associated with this Report on Task 2 of the EC Mandate and are presented in ECC Report 316 [6]. These studies address FS short-term protection between point-to-point applications and WAS/RLAN indoor only deployments as well as potential WAS/RLAN portable devices that operate outdoor with power levels significantly lower than that for indoor use. CEPT performed complementary studies in parallel with the public consultation on this Report in order to further assess the in-band Power Spectral Density (PSD) for VLP devices and out-of-band emission limits below 5935 MHz for LPI and VLP devices.

The following sections provide considerations on the results of coexistence studies that are limited to outstanding issues: protection of existing Urban Rail ITS technologies (CBTC) and fixed service applications.

#### 3.1 PROTECTION OF URBAN RAIL ITS

ECC Decision (08)01 [8] harmonises use of Safety-Related Intelligent Transport Systems (ITS) in the 5875-5935 MHz frequency band.

Technical conditions based on CEPT consideration to be applied when considering Urban Rail ITS were finally agreed as follows:

For LPI use:

- maximum mean e.i.r.p. of 23 dBm;
- OoB WAS/RLAN emission limit below 5935 MHz of -22 dBm/MHz.

For VLP use:

- maximum mean e.i.r.p. of 14 dBm;
- OoB WAS/RLAN emission limit below 5935 MHz of -45 dBm/MHz.

It was noted that Urban Rail ITS should be robust against adjacent WAS/RLAN emissions in 5925–6425 MHz (see *considering z*) of ECC Decision (08)01 amended by the ECC in March 2020 [8]).

It should be noted that the -45 dBm/MHz OOB limit below 5935 MHz for VLP would allow VLP initial market to take up. CEPT also agreed that this OOB limit should be valid in time only until 31 December 2024 and be re-examined with regard to an opportunity to relax it based on the real IEEE and DSSS Urban Rail interference situation. In absence of the justified evidence, a value of -37 dBm/MHz, for the OOB limit below 5935 MHz, will be adopted from 01/01/2025.

#### 3.2 PROTECTION OF THE FIXED SERVICE

Two sharing studies in relation with co-channel operation of WAS/RLAN with the Fixed Service (FS) were conducted. Firstly, long-term criteria were addressed in ECC Report 302 [1] with complementary short-term technical studies presented in ECC Report 316 [6]. These provide a variety of studies with different results on the assessment of the potential interference from 6 GHz WAS/RLANs on the FS.

There were different views on the need for specific mitigation applied to LPI devices to protect FS operated in the frequency band 5925-6425 MHz.

Some administrations were indeed concerned that LPI devices operating in situations with low building attenuation, particularly if located in high storeys, or potential accidental outdoor use of LPI devices, could lead to short-term interference for Point-to-Point fixed links. These administrations initially consider it is necessary

to investigate how to provide a regulatory environment to enable geographical restrictions on a national basis managed, for instance, via geolocation capabilities.

In view however of facilitating an early introduction of LPI devices on the EU market, CEPT supports an harmonised regulatory framework that does not require the implementation of national geolocation database.

National administrations should support an effective enforcement of the indoor restriction for LPI in order to maintain an adequate protection of the fixed service.

It has also been emphasised during the investigations that drone use should not be permitted due to the likelihood of a drone coming into the main beam of an FS antenna.

### **3.3 COEXISTENCE WITH RADIOCOMMUNICATION SERVICES ABOVE 6425 MHZ**

It has been proposed in the context of the work under this Mandate that the WAS/RLAN channel plan is to cover the frequency range 5945–6425 MHz.

Since the services operating in CEPT above 6425 MHz also have co-channel use within the frequency band 5925-6425 MHz, it has not been considered necessary to perform specific studies on the adjacent channel coexistence with these services above 6425 MHz.

Appropriate limits would be defined in the relevant ETSI harmonised standard and provide as such a reference protection level to comply with the essential requirements of Directive 2014/53/EU [3].



## 4 RECOMMENDED FRAMEWORK

Proposed harmonised technical conditions are presented in Annex 1 to this CEPT Report.

The recommended framework distinguishes two categories of devices:

- Low Power Indoor (LPI) devices;
- Very Low Power (VLP) devices.

These harmonised technical conditions would have to be applied in the corresponding ETSI harmonised standard to be developed for adoption under Directive 2014/53/EU [3].

## 5 CONCLUSIONS

This CEPT Report contains technical conditions for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the 5945-6425 MHz band. This is in response to Task 2 of the Mandate from the European Commission (EC) to CEPT (see Annex 2).

The recommended framework distinguishes the following use cases for use by WAS/RLAN in the 5945-6425 MHz frequency band:

- Low power indoor (LPI) use, max 200 mW e.i.r.p., with no outdoor use allowed;
- Very low power (VLP) portable use, max 25 mW e.i.r.p., that may operate both indoor and outdoor.

CEPT considered in its investigations the possible use of the 5925-6425 MHz band for the provision of wireless broadband services. However, in the course of the technical considerations, it was proposed that WAS/RLAN transmissions should be constrained to above 5945 MHz to take into account operations of Urban Rail Intelligent Transport Systems (ITS).

According to the studies conducted, CEPT concludes that coexistence between WAS/RLAN operating in the 5945-6425 MHz band and existing services and systems within the band and in adjacent band would be technically feasible under the generic technical conditions detailed in Annex 1:

It should be noted that the -45 dBm/MHz OOB limit below 5935 MHz for VLP would allow VLP initial market to take up. CEPT also agreed that this OOB limit should be valid in time only until 31 December 2024 and be re-examined with regard to an opportunity to relax it based on the real IEEE and DSSS Urban Rail interference situation. In absence of the justified evidence, a value of -37 dBm/MHz, for the OOB limit below 5935 MHz, will be adopted from 01/01/2025.

In addition, to maintain the protection of point-to-point FS, national administrations should consider an effective enforcement of the indoor restriction for LPI.

WAS/RLAN use under these conditions is expected to be exempt from individual licensing. The harmonisation on an EU basis would support EU Directive 2014/53/EU [3] of the European Parliament and of the Council of 16 April 2014 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity. Additionally, CEPT has developed a ECC Decision (20)01 to foster wider regional harmonisation of the use of the frequency band 5945-6425 MHz by WAS/RLAN devices.

**ANNEX 1: PROPOSED HARMONISED TECHNICAL CONDITIONS**

**A1.1 INTRODUCTION**

For 6 GHz WAS/RLAN equipment covered by these harmonised technical conditions two categories of devices are defined:

- Low Power Indoor (LPI) devices;
- Very Low Power (VLP) devices.

**A1.2 LOW POWER INDOOR (LPI) WAS/RLAN DEVICES**

LPI WAS/RLAN devices shall comply with the harmonised technical conditions listed in Table 1 below.

**Table 1: Low Power Indoor (LPI) WAS/RLAN devices**

Parameter	Technical conditions
Permissible operation	Restricted to indoor use only (including trains where metal coated windows (note 1) are fitted and aircraft) Outdoor use (including in road vehicles) is not permitted
Category of device	An LPI access point or bridge that is supplied power from a wired connection, has an integrated antenna and is not battery powered. An LPI client device is a device that is connected to an LPI access point or another LPI client device and may or may not be battery powered.
Frequency band	5945-6425 MHz
Channel access and occupation rules	An adequate spectrum sharing mechanism shall be implemented.
Maximum mean e.i.r.p. for in-band emissions (note 2)	23 dBm
Maximum mean e.i.r.p. density for in-band emissions (note 2)	10 dBm/MHz
Maximum mean e.i.r.p. density for out-of-band emissions below 5935 MHz (note 2)	-22 dBm/MHz
<p>Note 1: Or similar structures made of material with comparable attenuation characteristics.</p> <p>Note 2: The "mean e.i.r.p." refers to the e.i.r.p. during the transmission burst, which corresponds to the highest power, if power control is implemented.</p>	

Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU [3] shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the Official Journal of the European Union under Directive 2014/53/EU, performance at least equivalent to these techniques shall be ensured.

### A1.3 VERY LOW POWER (VLP) WAS/RLAN DEVICES

VLP WAS/RLAN devices shall comply with the harmonised technical conditions listed in Table 2 below.

**Table 2: Very Low Power (VLP) WAS/RLAN devices**

Parameter	Technical conditions
Permissible operation	Indoors and outdoors Use on drones is prohibited
Category of device	The VLP device is a portable device
Frequency band	5945-6425 MHz
Channel access and occupation rules	An adequate spectrum sharing mechanism shall be implemented.
Maximum mean e.i.r.p. for in-band emissions (note 1)	14 dBm
Maximum mean e.i.r.p. density for in-band emissions (note 1)	1 dBm/MHz
Narrowband usage maximum mean e.i.r.p. density for in-band emissions (note 1) (note 2)	10 dBm/MHz
Maximum mean e.i.r.p. density for out-of-band emissions below 5935 MHz (note 1)	-45 dBm/MHz (note 3)
<p>Note 1: The "mean e.i.r.p." refers to the e.i.r.p. during the transmission burst, which corresponds to the highest power, if power control is implemented.</p> <p>Note 2: Narrowband (NB) devices are devices that operate in channel bandwidths below 20 MHz. Narrowband devices also require a frequency hopping mechanism based on at least 15 hop channels to operate at a PSD value above 1 dBm/MHz.</p> <p>Note 3: ECC will study the appropriateness of this level of OOB by 31/12/2024. In absence of the justified evidence, a value of -37 dBm/MHz will be adopted from 01/01/2025.</p>	

**ANNEX 2: CEPT MANDATE**

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**EUROPEAN COMMISSION**  
 Directorate-General for Communications Networks, Content and  
 Technology Director-General

Brussels,  
 DG CNECT/B4

**MANDATE TO CEPT**

**TO STUDY FEASIBILITY AND IDENTIFY HARMONISED TECHNICAL CONDITIONS  
 FOR WIRELESS ACCESS SYSTEMS INCLUDING RADIO LOCAL AREA NETWORKS  
 IN THE 5925-6425 MHz BAND FOR THE PROVISION OF WIRELESS BROADBAND SERVICES**

**1. PURPOSE**

The objective of the Mandate is to study feasibility and identify harmonised technical conditions for a sustainable and efficient use on a coexistence basis of the 5925-6425 MHz band for wireless access systems including radio local area networks (WAS/RLANs). Based on the results of the compatibility and coexistence studies covering the 5925-6425 MHz band to be carried out under this Mandate, the relevant harmonised technical conditions should enable the coexistence with other systems in this and adjacent frequency bands.

**2. BACKGROUND**

Regarding the frequency band 5925-6425 MHz, the European Table of frequency allocations and applications in the frequency range 8.3 kHz to 3 000 GHz (ERC Report 25 (ECA Table))<sup>1</sup> includes primary allocations to the Fixed Service and to the Fixed- Satellite Service (Earth-to-space). According to the ECA Table, radio applications in this band include Satellite Earth Stations on board Vessels, Fixed Satellite Service Earth Stations, Fixed Service systems (point-to-point), Passive Sensors (satellite), SRD (Radiodetermination) and UWB applications. The band 5925-6425 MHz is allocated by ITU Radio Regulations (RR) to the Mobile service on a primary basis.

The frequency band 5925-6425 MHz is used by medium/high capacity, long distance fixed terrestrial links (point-to-point) for backhauling of mobile broadband networks<sup>2</sup>. Some Member States have also authorised urban rail systems (such as CBTC) in parts of this band. The band 5925-6425 MHz is also part of the so-called “standard C band”.

A considerable amount of WAS/RLAN devices currently in use are operated in the 2.4 GHz band (2400-2483.5 MHz) where, based on the Commission Implementing Decision (EU) 2017/1483 amending Decision 2006/771/EC on short-range devices, 83.5 MHz of

<sup>1</sup> ERC Report 25 available at <http://www.erodocdb.dk/Docs/doc98/official/pdf/ERCREP025.PDF>,  
 EFIS database at [www.efis.dk](http://www.efis.dk)

<sup>2</sup> See ERC Recommendation 14-01 “Radio-frequency channel arrangements for high capacity analogue and digital radio-relay systems operating in the band 5925 to 6425 MHz” at <http://www.erodocdb.dk/Docs/doc98/official/pdf/ERCREC1401.PDF>

spectrum is available for such usage on a non-exclusive, non-interference and non-protected basis to a large number of RLANs and non-specific short-range devices.

Commission Decision 2007/90/EC amending Decision 2005/513/EC harmonises the use of radio spectrum in the 5 GHz band (5150-5350 MHz and 5470-5725 MHz) for wireless access systems including radio local area networks (WAS/RLANs). The use of the 5 GHz band for the operation of WAS/RLAN systems is subject to general authorisation only (Commission Recommendation 2003/203/EC)<sup>3</sup>. Currently 455 MHz of harmonised spectrum is available on a non-exclusive, non-interference and non-protected basis.

The existing regulatory framework for WAS/RLAN systems using the 2.4 GHz and 5 GHz bands has led to a rapid take-up of WAS/RLAN usage which is based on the availability in the internal market of a nearly-globally harmonised spectrum resource that fosters large economies of scale for equipment manufacturers. The low spectrum access barrier has led to a large-scale deployment of interoperable WAS/RLAN-capable devices and access points. In addition to the private use of WAS/RLANs, wireless broadband access through publicly accessible WAS/RLAN access points is now recognised as important connectivity infrastructure that is largely complementary to mobile internet services provided by mobile network operators.

Moreover, large-scale public networks for WAS/RLAN are today a significant driver of 5 GHz band use, especially where outdoor coverage is being provided. This type of WAS/RLAN usage is nevertheless not always compliant with the national authorisation framework and is an ongoing source of interference e.g. to meteorological radars without resolution.

Making available additional spectrum resources on a coexistence basis without refarming existing usage would provide additional socioeconomic benefits under the condition that spectrum coexistence with incumbent services is feasible and robust. In this context, harmonised standards being developed by ETSI should ensure operational conditions for WAS/RLANs in order to enable the coexistence with other systems in the 5925-6425 MHz band and in the adjacent bands.

In order to identify additional spectrum resources for WAS/RLAN on a shared basis, the Commission submitted a Mandate<sup>4</sup> to CEPT in 2013 to study and identify harmonised compatibility and sharing conditions for WAS/RLANs in the “5 GHz extension bands” 5350-5470 MHz and 5725-5925 MHz.

CEPT Report 64<sup>5</sup> of November 2016 concluded that considering the results of the studies, it is not currently possible to specify any appropriate mitigation techniques and/or operational compatibility and sharing conditions that would allow WAS/RLANs to be operated in the 5350-5470 MHz and 5725-5925 MHz while ensuring relevant protection of incumbent services in these bands. However, studies are ongoing into mitigation techniques in these bands, and in addition, the studies done in CEPT Report 57 and 64 are being updated by further work that is currently taking place under the WRC-19 Agenda Item 1.16.

<sup>3</sup> Commission Recommendation of 20 March 2003 on the harmonisation of the provision of public R-LAN access to public electronic communications networks and services in the Community  
a <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:078:0012:0013:EN:PDF>

<sup>4</sup> document RSCOM13-32rev3 at <https://ec.europa.eu/digital-single-market/en/news/radio-spectrum-cept-mandates-0>

<sup>9</sup> <http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP064.PDF>

The outcome of the Mandate submitted to CEPT in 2013 does not allow the Commission to proceed with a harmonisation measure on WAS/RLANs in the bands 5350-5470 MHz and 5725-5925 MHz. However, there is an interest<sup>6</sup> to explore new opportunities for making available additional spectrum in the 5925-6425 MHz band for WAS/RLANs while protecting other radio services / applications currently using the 5925-6425 MHz band.

Relevant coexistence solutions for possible usage of the band 5925-6425 MHz by WAS/RLAN systems still need to be identified, defined and developed. They may imply operational developments enabling the implementation of a coexistence framework. An innovative coexistence solution increases the complexity and needs time before the practical implementation, in particular due to the need to validate and to implement solutions.

### 3. JUSTIFICATION

Pursuant to Article 4(2) of the Radio Spectrum Decision<sup>7</sup>, the Commission may issue mandates to the CEPT for the development of technical implementing measures with a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum necessary for the functioning of the internal market. Such mandates shall set the tasks to be performed and their timetable.

Pursuant to Article 6 of the Radio Spectrum Policy Programme (RSPP)<sup>8</sup>, the Commission shall, in cooperation with Member States, assess the justification and feasibility of extending the allocations of spectrum for wireless access systems, including radio local area networks operating under general authorisations regime. In addition, Article 3I of the RSPP requires Member States, in cooperation with the Commission, to take all steps necessary to ensure that sufficient spectrum for coverage and capacity purposes is available for achieving the target for all citizens to have access to broadband speeds of not less than 30 Mbps by 2020. In order to meet future broadband connectivity needs, the Commission proposes that by 2025 all schools, transport hubs and main providers of public services as well as digitally intensive enterprises should have access to internet connections with download/upload speeds of 1 Gigabit of data per second<sup>9</sup>. In addition, all European households, rural or urban, should have access to networks offering a download speed of at least 100 Mbps, which can be upgraded to 1 Gigabit.

In view of the above broadband connectivity objectives as part of the Digital Single Market Strategy and Digital Agenda for Europe and considering the steadily increasing amount of data traffic delivered through fixed broadband networks, the Commission

<sup>9</sup> ETSI ERM is developing a System Reference document (Srdoc) TR 103 524 on Wireless access systems including radio local area networks (WAS/RLANs) in the band 5925 MHz to 6725 MHz, [https://portal.etsi.org/webapp/workprogram/Frame\\_WorkItem.asp?SearchPage=TRUE&qSORT=HIGHVERSION&qINCL UDE\\_SUB\\_TB=True&butSimple=++Search++&qETSI\\_STANDARD\\_TYPE=&qETSI\\_NUMBER=103+524&qMILESTONE =&qACHIEVED\\_DAY=&qACHIEVED\\_MONTH=&qACHIEVED\\_YEAR=&qREPORT\\_TYPE=SUMMARY&optDisplay=1 0&qTB\\_ID=&includeNonActiveTB=FALSE](https://portal.etsi.org/webapp/workprogram/Frame_WorkItem.asp?SearchPage=TRUE&qSORT=HIGHVERSION&qINCL UDE_SUB_TB=True&butSimple=++Search++&qETSI_STANDARD_TYPE=&qETSI_NUMBER=103+524&qMILESTONE =&qACHIEVED_DAY=&qACHIEVED_MONTH=&qACHIEVED_YEAR=&qREPORT_TYPE=SUMMARY&optDisplay=1 0&qTB_ID=&includeNonActiveTB=FALSE).

<sup>9</sup> Decision 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJ L 108 of 24.4.2002

<sup>8</sup> Decision 243/2012/EU of 14 March 2012, OJ L 81 of 21.3.2012

<sup>9</sup> See the Communication Connectivity for a Competitive Digital Single Market – Towards a European Gigabit Society (COM(2016) 587 final)

considers WAS/RLAN frequency bands as part of the solutions for the provision of internet-based services. It is therefore necessary to ensure that sufficient spectrum resources are made available on a harmonised basis to support a long-term future for new generations of WAS/RLAN technologies that will provide increasing data capacity and speed.

Recent studies carried out by WAS/RLAN industry point to the ever growing number and diversity of devices for WAS/RLAN along with increased connection speeds and data traffic volumes will exceed the capacity of spectrum currently available in the 5 GHz band by 2020. Between 500 MHz and 1 GHz of additional spectrum in various world regions may be needed to support expected growth in WAS/RLAN usage by 2020. Additional spectrum identified for WAS/RLAN should support wide channels which are required for a growing number of applications which need a large bandwidth to achieve Gigabit speeds.

The Commission focuses on the 5925-6425 MHz band as a promising alternative to 5 GHz where spectrum currently available for WAS/RLAN cannot be extended given the outcome of the previous Mandate (2013).

However, such an opportunity can only be realised if appropriate coexistence conditions between WAS/RLAN and radio applications in the band 5925-6425 MHz are identified and able to provide confidence to all spectrum users. It will therefore be necessary to carry out the appropriate technical studies and identify suitable compatibility and coexistence conditions to fully safeguard the operation of all radio services / applications currently using the band 5925-6425 MHz as well as the bands adjacent to this band.

CEPT should work in cooperation with ETSI and take into account international harmonisation, as appropriate, in order that any opportunities for even greater economies of scale for manufacturers of WAS/RLAN equipment can be realised.

#### **4. TASK ORDER AND SCHEDULE**

The objective of this Mandate is to (1) study regulatory and technical feasibility of the introduction of WAS/RLANs in the band 5925-6425 MHz, including an assessment of coexistence scenarios for WAS/RLANs to operate on a coexistence basis to (2) develop harmonised compatibility and coexistence conditions and propose relevant harmonised technical conditions for WAS/RLAN usage subject only to general authorisations, if technically feasible.

The CEPT is thereby mandated to carry out the following tasks:

##### **Task 1 – Assessment and study of compatibility and coexistence scenarios in the band 5925-6425 MHz**

To study and assess compatibility and coexistence scenarios for WAS/RLANs in the 5925-6425 MHz band and identify relevant parameters and coexistence conditions to be implemented in the regulatory framework in order to enable coexistence between existing usages and WAS/RLAN systems without constraining incumbent uses in various Member States in and adjacent to the band 5925-6425 MHz including at the outer EU border.

For each compatibility/coexistence scenario, the risk of interference, the deployment assumptions of all applications, the geographical extent of usage and consequential restrictions in WAS/RLAN deployment should be identified as well as



requirements for implementing such scenarios, e.g. in terms of harmonised technical parameters or in terms of other regulatory and operational aspects which support the implementation of a coexistence framework.

### **Task 2 – Development of harmonised technical conditions**

Taking into account the results of task 1, for the band 5925-6425 MHz develop appropriate mitigation techniques and/or operational compatibility/coexistence conditions. In the light of experience, these conditions should in particular identify the harmonised technical parameters that would be needed to ensure in the internal market consistent harmonised conditions for WAS/RLANs operating on a coexistence basis, if technically feasible. This should be developed in close cooperation with ETSI which is working on harmonised standards which include operational coexistence conditions for WAS/RLANs with other systems in the band and in adjacent bands.

It is assumed in this Mandate that WAS/RLANs could operate on the basis of a general authorisation only. With a view to achieving a scope for worldwide harmonisation of additional spectrum for WAS/RLAN that would strengthen the economies of scale for manufacturers of RLAN equipment and thereby benefit all end-users, the work carried out under this task should take into account developments in other ITU Regions, e.g. through the organisation of a workshop.

In the work carried out under the Mandate, the overall policy objectives of the RSPP, such as effective and efficient spectrum use and the support for specific Union policies shall be given utmost consideration. In implementing this Mandate, the CEPT shall, whenever relevant, take utmost account of EU law applicable and support the principles of service and technological neutrality, non-discrimination and proportionality insofar as technically possible.


CEPT is also requested to collaborate actively with all concerned stakeholders, as for instance, (i) the European Telecommunications Standardisation Institute (ETSI), which develops relevant voluntary harmonised standards for the presumption of conformity under Directive 2014/53/EU and (ii) the Coordination of the Notified Bodies under the same Directive (REDCA), which ensures a harmonised approach in the certification of equipment when manufacturers do not use harmonised standards.

CEPT should provide deliverables according to the following schedule:

<b>Delivery date</b>	<b>Deliverable</b>	<b>Subject</b>
November 2018	Interim Report from CEPT to the Commission	Description of work undertaken and interim results of task (1)
March 2019	Final Draft Report A <sup>2</sup> from CEPT to the Commission	Draft results under task (1)
March 2020	Final Report A from CEPT to the Commission taking into account the outcome of the public consultation  Final Draft Report B <sup>3,4</sup> from CEPT to the Commission	Final results under task (1)  Draft results under task (2)
July 2020	Final Report B from CEPT to the Commission taking into account the outcome of the public consultation	Final results under task (2)

In addition, CEPT is requested to report on the progress of its work pursuant to this Mandate to all meetings of the Radio Spectrum Committee taking place during the course of the Mandate.

The Commission, with the assistance of the Radio Spectrum Committee and pursuant to the Radio Spectrum Decision, may consider applying the results of this mandate in the EU, pursuant to Article 4 of the Radio Spectrum Decision.

 Electronically signed on 18/12/2017 17:22 (UTC+01) in accordance with article 4.2 (Validity of electronic documents) of Commission Decision 2004/563

<sup>2</sup> In light of the timing of meetings of the Radio Spectrum Committee, the delivery date is amended to July 2019.

<sup>3</sup> subject to a public consultation

<sup>4</sup> Following discussions in ECC #52, the preparation of draft CEPT Report B was deferred for one ECC meeting cycle

**ANNEX 3: LIST OF REFERENCES**

- [1] ECC Report 302: "Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 5925-6425 MHz", approved May 2019
- [2] CEPT Report 73: "Report from CEPT to the European Commission in response to the Mandate to study feasibility and identify harmonised technical conditions for Wireless Access Systems including Radio Local Area Networks in the 5925-6425 MHz band for the provision of wireless broadband services; Report A: Assessment and study of compatibility and coexistence scenarios for WAS/RLANs in the band 5925-6425 MHz", approved March 2020
- [3] 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
- [4] Recommendation ITU-R M.1450-5: "Characteristics of broadband radio local area networks"
- [5] Draft ETSI EN 303 687: "6 GHz RLAN Harmonised Standard for access to radio spectrum"
- [6] ECC Report 316: "Sharing studies assessing short-term interference from Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) into Fixed Service in the frequency band 5925-6425 MHz", approved May 2020
- [7] CEPT Report 71: "Report from CEPT to the European Commission in response to the Mandate to study the extension of the Intelligent Transport Systems (ITS) safety-related band at 5.9 GHz", approved March 2019
- [8] ECC Decision (08)01 "Harmonised use of Safety-Related Intelligent Transport Systems (ITS) in the 5875-5935 MHz frequency band", approved March 2008 and latest amendment March 2020
- [9] ETSI EN 300 440 "Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU"