

ECC Recommendation

(08)01

Use of the band 5855-5875 MHz for Intelligent Transport Systems (ITS)

approved 21 February 2008

latest amendment on 06 March 2020

INTRODUCTION

This ECC Recommendation addresses frequency usage for non-safety applications of Intelligent Transport Systems (ITS) in the band 5855-5875 MHz. The frequency band is allocated to the Mobile Service, the Fixed Service and the Fixed-Satellite Service (Earth-to-space) on a primary basis in ITU Region 1 and in accordance with the European Common Allocation Table (ERC Report 25 [1]). It is part of the ISM band in accordance with ITU RR 5.150.

In accordance with ECC/DEC/(08)01 [2] the use of the frequency band 5875-5935 MHz is harmonised for safety-related applications of ITS in Europe.

The non-safety frequency band for ITS has been identified by ETSI within their System Reference Document TR 102 492-2 [3]. Operation is considered to be on a non-protected and non-interference basis.

The use of the band 5855-5875 MHz for non-safety ITS applications has been considered within the general compatibility studies for ITS applications in the band 5855-5925 MHz in ECC Report 101 [4] and in ECC Report 228 [5].

ECC Report 228 includes a review of the compatibility studies between ITS in the frequency band 5855-5925 MHz and other systems in adjacent bands and concluded that regarding ITS unwanted emissions at the antenna, a level of -65dBm/MHz e.i.r.p. will be required in the band 5795-5815 MHz for truck installation and -60 dBm/MHz e.i.r.p for car installation respectively¹. ECC Report 228 also lists a number of mitigation techniques and if so employed, an unwanted emission limit of -30 dBm/MHz e.i.r.p. is sufficient for the protection of the adjacent FS above 5925 MHz.

ECC Report 290 [6] examines the applicability of ECC Reports 101 and 228 for LTE-V2X and Urban Rail ITS applications; the conclusions of the analysis are presented in Table 1 of that Report and can be summarised as follows with regard to LTE-V2X:

- Compatibility between LTE-V2X in mode A² and road tolling is achieved; while compatibility between LTE-V2X in mode B² and road tolling could be achieved if timing requirements (Ton & Toff) and aggregated spurious emissions do not exceed those of ITS in ECC Report 228 in the interference zone.

ECC Report 291 [7] studies the compatibility between smart tachograph, weight and dimension applications and systems operating in the band 5795-5815 MHz and in the adjacent bands.

The Inter Vehicle Communication (IVC or V2V) non-safety ITS applications within the band 5855-5875 MHz are typically short range communication between vehicles on the roads and thus the interference potential with SRD and BFWA applications are limited by the operational conditions of the ITS applications. SRD within this band would typically be used indoor for devices such as home automation systems and BFWA used with highly directional antennas which would provide further mitigation of potential interference problems. The non-safety ITS applications would not suffer from extensive interference from Short Range Devices or BFWA within the band as there is no need for low latency communication for the non-safety applications.

ECC Report 109 [8] concludes that the existing results of the different compatibility studies between each of the systems will not be significantly changed by the aggregate impact of BFWA, Broadband Disaster Relief (BBDR) and ITS.

ECC Report 110 [9] concludes that, if the band 5855-5875 MHz is used for BBDR radio applications, protection distances between ITS and BBDR could exceed several kilometres in both directions in rural areas but limited to hundreds of metres in urban and suburban cases. Mitigation techniques integrated in BBDR devices may improve the compatibility further in that case.

¹ Equivalent mitigation techniques, as defined in the relevant ETSI EN 302 571, may also be used.

² Modes A and B are specified in ETSI TS 102 792 Table 5.3, which is part of the requirements defined in ETSI EN 302 571.

In October 2017, the EC issued a guidance letter to CEPT (document RSCOM 17-24rev1) [11] for the seventh update of the technical annex to the Short Range Devices (SRD) Decision 2006/771/EC, pursuant to the permanent Mandate. In particular, the Commission invited CEPT to consider adding the frequency range 5855-5875 MHz as a new entry for non-safety applications of ITS under the TTT device category to the Annex of Decision 2006/771/EC [12].

In response to the mandate, the ECC approved CEPT Report 70 [13] on 8 March 2019.

ECC RECOMMENDATION 08(01) OF 21 FEBRUARY 2008 ON USE OF THE BAND 5855-5875 MHz FOR INTELLIGENT TRANSPORT SYSTEMS (ITS) AMENDED 3 JULY 2015 AND AMENDED 6 MARCH 2020

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that non-safety ITS applications in the frequency band 5855-5875 MHz can provide services that would enhance the ITS safety concept for in particular inter vehicle communication (IVC or V2V) and infrastructure to vehicle (I2V) communication;
- b) that Recommendation ITU-R M.2121-0 [17] encourages administrations to “consider using the frequency band 5850 to 5925 MHz, or part thereof, for current and future ITS applications”;
- c) that ECC Decision (08)01 [2] for harmonisation of ITS (safety- related applications) within the frequency band 5875-5935 MHz;
- d) that a harmonised approach to the availability of the band 5855-5875 MHz for non-safety ITS applications within the CEPT administrations is beneficial;
- e) that the frequency band 5855-5875 is allocated to the Mobile Service, the Fixed Service and the Fixed-Satellite Service (Earth-to-space) on a primary basis in ITU Region 1 and in accordance with the European Common Allocation Table (ERC Report 25 [1]);
- f) that the frequency band is also part of the ISM band 5725-5875 MHz in accordance with ITU RR 5.150;
- g) that the frequency band 5725-5875 MHz is designated for non-specific SRD by ERC Recommendation 70-03 [14];
- h) that the frequency band 5795-5815 MHz is designated for Transport and Traffic Telematics (TTT) applications by ERC Recommendation 70-03 ;
- i) that the frequency band 5725-5875 MHz has been identified for BFWA in accordance with ECC Recommendation (06)04 [15];
- j) that ECC Report 228 provides the requirements to protect TTT in 5795-5815 MHz and Fixed Service above 5925 MHz as adjacent band systems;
- k) that ECC Report 101 [4] provides the requirements to protect other services below 5850 MHz and above 5925 MHz as adjacent band systems;
- l) that ECC Report 290 [6] examines the applicability of ECC Reports 101 [4] and 228 [5] for LTE-V2X and Urban Rail ITS applications up to 5925 MHz;
- m) that ECC Report 291 [7] studies the compatibility between smart tachograph, weight and dimension applications and systems operating in the band 5795-5815 MHz and in the adjacent bands;
- n) that CEPT Report 70 [13] proposes adding the frequency range 5855-5875 MHz as a new entry for non-safety applications of ITS;
- o) that ETSI has developed the Harmonised European Standard EN 302 571 [10] for Road ITS equipment that includes requirements which ensure the protection of existing services in 5855-5925 MHz and in adjacent bands;
- p) that the ETSI Technical Specification TS 102 792 [16] specifies requirements to ensure coexistence between Road ITS at 5.9 GHz and TTT within 5795-5815 MHz;
- q) that transmitter power reduction, duty cycle restrictions and specified frequency re-use conditions (e.g. for periodic Road ITS messages and ITS channel congestion control considerations) are not only beneficial for the compatibility with other systems in the same or adjacent frequency bands but also for the efficient use of the spectrum by cooperative ITS;
- r) that the average conveyed Road ITS message duration is assumed to be below 1 millisecond with a duty cycle below 1% over one hour;
- s) that ITS devices should apply spectrum access techniques in 5855-5875 MHz to enable sharing of the spectrum;

recommends

1. that administrations should make the frequency band 5855-5875 MHz available for ITS non-safety applications in order to support and enhance ITS within CEPT;
2. that the spectrum for ITS applications is split into blocks as defined in Annex 1;
3. that the maximum spectral power density for ITS stations should be limited to 23 dBm/MHz e.i.r.p. and the total power should not exceed 33 dBm e.i.r.p. with a Transmit Power Control (TPC) range of 30 dB;
4. that CEPT administrations should permit free circulation and use of ITS equipment subject to the provisions of this Recommendation;
5. that CEPT administrations should exempt ITS equipment falling under this Recommendation from individual licensing;
6. that non-safety ITS applications should be deployed on a non-protected and non-interference basis;
7. that CEPT administrations shall communicate the national measures implementing this Recommendation to the Office when the Recommendation is nationally implemented.”

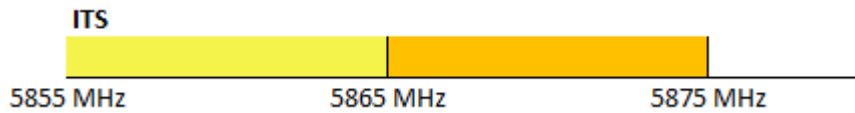
Note:

Please check the Office documentation database <http://www.ecodocdb.dk> for the up to date position on the implementation of this and other ECC Recommendations.

ANNEX 1: FREQUENCY ARRANGEMENT

The frequency arrangement is based on a block size of 10 MHz starting at the lower edge of the band, at 5855 MHz.

For ITS:



In 5855-5875 MHz, ITS applications shall use channels within the boundaries of each 10 MHz block. Channel bandwidth may be lower than 10 MHz.

ANNEX 2: LIST OF REFERENCES

This annex contains the list of relevant reference documents.

- [1] ERC Report 25: “The European table of frequency allocations and applications in the frequency range 8.3 kHz to 3000 GHz”
- [2] ECC Decision (08)01: “the harmonised use of the 5875-5925 MHz frequency band for Intelligent Transport Systems (ITS)”, March 2020
- [3] ETSI TR 102 492-1/2: ETSI System Reference Document on “Intelligent Transport System; “Part 1: Technical characteristics for pan-European harmonized communications equipment operating in the 5 GHz frequency range and intended for critical road-safety applications”
“Part 2: Technical characteristics for pan European harmonized communications equipment operating in the 5 GHz frequency range intended for road safety and traffic management, and for non-safety related ITS applications”
- [4] ECC Report 101: “Compatibility studies in the band 5855-5925 MHz between Intelligent Transport Systems (ITS) and other systems”, February 2007
- [5] ECC Report 228: “Compatibility studies between Intelligent Transport Systems (ITS) in the band 5855-5925 MHz and other systems in adjacent bands”, January 2015
- [6] ECC Report 290: “Studies to examine the applicability of ECC Reports 101 and 228 for various Intelligent Transport Systems (ITS) technologies under EC Mandate (RSCOM 17-26Rev.3)”, January 2019
- [7] ECC Report 291: “Compatibility studies between smart tachograph, weight&dimension applications and systems operating in the band 5795-5815 MHz and in the adjacent bands”, January 2019
- [8] ECC Report 109: “The aggregate impact from the proposed new systems (ITS, BBDR and BFWA) in the 5725-5925 MHz band on the other services/systems currently operating in this band”, September 2009
- [9] ECC Report 110: “Compatibility studies between Broad-Band Disaster Relief (BBDR) and other systems”, September 2009
- [10] ETSI EN 302 571: “Harmonised European Standard on “Intelligent Transport Systems (ITS);Radiocommunications equipment operating in the 5 855 MHz to 5 925 MHz frequency band; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU”
- [11] Document SRDMG(19)Info5: “Guidance to CEPT on the eight update of Decision 2006/771/EC (SRD Decision) (DG CNECT/B4/SRD8)”
- [12] Decision 2006/771/EC “on harmonisation of the radio spectrum for use by short-range devices”
- [13] CEPT Report 70:”in response to the EC Permanent Mandate on the ”Annual update of the technical annex of the Commission Decision on the technical harmonisation of radio spectrum for use by short range devices”, March 2019
- [14] ERC Recommendation 70-03: “Relating to the use of Short Range Devices (SRD)”
- [15] ECC Recommendation (06)04: “Use of the band 5725-5875 MHz for Broadband Fixed Wireless Access (BFWA)”, December 2006
- [16] ETSI TS 102 792:”Technical Specification on “Intelligent Transport Systems (ITS);Mitigation techniques to avoid interference between European CEN Dedicated Short Range Communication (CEN DSRC) equipment and Intelligent Transport Systems (ITS) operating in the 5 GHz frequency range”
- [17] Recommendation ITU-R M.2121-0 (01/2019): “Harmonization of frequency bands for Intelligent Transport Systems in the mobile service”