



ECC Recommendation (08)01

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

Approved 21 February 2008

Amended 3 July 2015

INTRODUCTION

This ECC Recommendation addresses frequency usage for non-safety applications of Intelligent Transport Systems (ITS) in the band 5855-5875 MHz. This 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 (ECA). It is part of the ISM band in accordance with RR 5.150.

In accordance with ECC/DEC/(08)01 the frequency band 5875-5925 MHz is designated to traffic safety applications in Europe and the objective with the non-safety applications within the same frequency range in the band 5855-5875 MHz is to provide non-safety communication services that would enhance the ITS concept for Inter Vehicle Communication (IVC) Infrastructure to Vehicle (I2V) communication, and portable ITS stations. A portable ITS station can be included in a mobile phone or as standalone devices for inclusion of pedestrians and cyclists into the overall traffic safety operations.

The non-safety frequency band for ITS has been identified by ETSI within the system reference document TR 102 492-part 2 and is based on the same technical parameters as ITS safety applications but 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 and in ECC Report 228.

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 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 -30dBm/MHz e.i.r.p. is sufficient for the protection of the FS above 5925 MHz.

The IVC 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. SRDs 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 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 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.

Cooperative ITS systems based on the ETSI ITS standards will be deployed from 2015 onwards. Major car manufacturers recently signed a memorandum of understanding to signal their intentions to provide cooperative ITS systems from 2015 on.

The scope of the current EN 302 571 is covering On Board Equipment (OBE equipment fitted with integral or dedicated antenna(s), intended for use in vehicles, e.g. a road or a rail vehicle) and Road Side Equipment (RSE equipment fitted with an antenna socket, integral or dedicated antenna(s), normally used as a fixed station); e.g. a road or rail infrastructure.

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

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

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that ITS non-safety applications in the frequency band 5855-5875 MHz can provide services that would enhance the ITS safety concept for in particular IVC communication but also for the related infrastructure to vehicle (R2V) communication;
- b) that CEPT administrations have agreed to develop an ECC Decision for ITS (traffic safety applications) within the frequency band 5875-5925 MHz;
- c) that a harmonised approach to the availability of the band 5855-5875 MHz for non-safety services within the CEPT administrations is beneficial;
- d) 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 (ECA);
- e) that the frequency band is also part of the ISM band 5725-5875 MHz in accordance with the ITU Radio Regulations footnote 5.150;
- f) that the frequency band 5725-5875 MHz is designated for non-specific SRDs by CEPT/ERC Recommendation 70-03;
- g) that the frequency band 5795-5815 MHz is designated for Transport and Traffic Telematics (TTT) applications by CEPT/ERC Recommendation 70-03;
- h) that the frequency band 5725-5875 MHz has been identified for BFWA in accordance with ECC/REC/(06)04;
- i) that ECC Report 101 and ECC Report 228 (which includes a review of the compatibility studies) details spectrum sharing studies between ITS systems within the frequency band 5855-5925 MHz and the other services and applications in this frequency range and identifies conditions for ITS applications that facilitates spectrum sharing with the above mentioned services and applications;
- j) that the ITS station concept and the ITS reference communications architecture is set out in EN 302 665, and there is no difference in the functions between a vehicle-based station, a fixed installed station or a portable ITS stations, i.e. all ITS stations can support all features and facilities;
- k) that ETSI has developed the harmonised European standard EN 302 571 for ITS equipment, road and rail (OBE and RSE), that also includes requirements which are going to ensure the protection of existing services in the 5855-5925 MHz bands and in adjacent bands;
- l) that the Technical Specification TS 102 792 V1.2.1, which specifies requirements to ensure coexistence between ITS at 5.9 GHz and TTT within 5795-5815 MHz, was published by ETSI in June 2015;
- m) that duty cycle restrictions and specified frequency re-use conditions (e.g. for periodic 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 systems;
- n) that only one ITS transmitting device uses an ITS frequency channel at any one time using listen before talk, transmitter power reduction and duty cycle restriction. The average conveyed ITS message duration is assumed to be below 1 millisecond. The frequency re-use distance depends on the ITS transmitter power and typically varies between 15 metres to 1 000 metres;

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 maximum spectral power density for ITS stations should be limited to 23 dBm/MHz e.i.r.p. but the total power should not exceed 33 dBm e.i.r.p. with a Transmit Power Control (TPC) range of 30 dB;
3. that within CEPT, in the 5.9 GHz range, the spectrum for ITS services is split into channels with a bandwidth of 10 MHz each;
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 that complies with ETSI EN 302 571 from individual licensing;
6. that non-safety ITS applications should be deployed on a non-protected and non-interference basis.”