CEPT ECC
Electronic Communications Committee

ECC Decision (04)10

The frequency bands to be designated for the temporary introduction of Automotive Short Range Radars (SRR)[1]

approved 12 November 2004

latest amended 4 March 2022

[1] Comparable technical specifications to those given in this ECC Decision are given in Commission Decision 2005/50/EC of 17 January 2005, amended by Commission Implementing Decisions 2011/485/EU of 29 July 2011 and (EU) 2017/2077 of 10 November 2017, for 24 GHz. EU Member States and, if so approved by the EEA Joint Committee, Iceland, Liechtenstein and Norway are obliged to implement these EC Decisions.

EXPLANATORY MEMORANDUM

1 INTRODUCTION

Automotive Short Range Radar (SRR) systems are an essential element of a future transport infrastructure for Europe, and in particular contribute to the long term goal of the European Commission *e*-safety initiative.

ECC Decision (04)03 of 19 March 2004 [2] designates the 77-81 GHz band for SRR. Until 1 January 2022, there was also a temporary designation for wideband 24 GHz SRR. However, no new wideband SRR equipment may be brought into use in the 24 GHz frequency band. This ECC Decision therefore only relates to 24 GHz SRR that remain in use.

Narrowband apparatus operating in accordance with the conditions set out in ERC Recommendation 70-03, Annex 1 (m) and Annex 5 (d1, d2,d3, d4, d5) [1] are not restricted by this ECC Decision and may continue to be placed on the market and used.

2 BACKGROUND

To meet the requirement for a permanent, long term solution for SRR equipment the frequency band 77-81 GHz has been designated (ECC Decision (04)03 of 19 March 2004). The 79 GHz SRR technology was not available at affordable prices for mass production in the point of time when ECC Decision (04)03 was adopted. Therefore, in order to meet an early introduction of SRR applications in Europe, the temporary use of a 5 GHz wide band centred around 24 GHz, hereinafter referred to as the '24 GHz range', was considered as this particular frequency range provided an immediate cost effective solutions.

However, the 24 GHz frequency range is heavily used in Europe for a wide range of applications that all represent, at different levels, critical national or European services and/or wide economic interests and for which very substantial existing long-term investments have been and are to be made.

Compatibility studies with these services (mainly fixed service, radio astronomy service and earth exploration-satellite service) conducted within CEPT and described in ECC Report 023 [3] concluded that the deployment of 24 GHz SRR is not feasible in the long term.

From 1 January 2022 onwards, no new wideband 24 GHz SRR may be brought into use. Users of existing equipment may however continue to use it for so long as they wish to maintain (e.g. providing spare parts, etc.) the originally installed equipment.

When the first version of this ECC Decision was developed, it was assumed that, allowing 24 GHz equipment on the European market until 1 July 2013 would hence allow the first product lines of vehicles in Europe equipped with SRR and thus introduce the SRR solutions on the market while developing the 79 GHz technology to provide the final solution. It was furthermore assumed that the 24 GHz frequency band (within 21.65-26.65 GHz) shall therefore only be made available for installation of SRR systems in Europe until 1 July 2013. After this date, all new SRR equipment shall either use the 79 GHz band or the smaller band 24.25-26.65 GHz until the 1 January 2018 (this date was extended by 4 years for SRR equipment mounted on motor vehicles for which a type-approval application has been submitted pursuant to Article 6(6) of Directive 2007/46/EC of the European Parliament and of the Council [4][2] in those countries where applicable and had been granted before 1 January 2018).

Note: the regulation in ERC Recommendation 70-03, Annex 5 [1] for the band 24.05-24.25 GHz for narrowband automotive radars is without any plans for a time limit within CEPT.

[2] Official Journal of the European Union, L 263, 9 October 2007, page 1

3 REQUIREMENT FOR AN ECC DECISION

The allocation of radio frequencies in CEPT member countries is laid down by law, regulation or administrative action. The ECC recognises that automotive SRR systems using the 21.65-26.65 GHz band may continue to be used for so long as the user wishes to maintain their systems and manufacturers can provide spare parts.

ECC DECISION OF 12 NOVEMBER 2004 ON THE FREQUENCY BANDS TO BE DESIGNATED FOR THE TEMPORARY INTRODUCTION OF AUTOMOTIVE SHORT RANGE RADARS (SRR) (ECC/DEC/(04)10) AMENDED ANNEX 1 JULY 2005; AMENDED 5 SEPTEMBER 2007; AMENDED 1 JUNE 2012; CORRECTED 6 MARCH 2015; UPDATED 2 MARCH 2018; AMENDED ON 5 MARCH 2021 AND AMENDED ON 4 MARCH 2022

"The European Conference of Postal and Telecommunications Administrations,

considering

a) that within Europe, there are proposals to improve road safety by using new information communications technologies, including building a European strategy to accelerate the research and development, deployment and use of intelligent road safety systems such as automotive Short Range Radars (SRR);

b) that the availability of spectrum for SRR equipment in Europe contributes to the long-term goal of the European Commission *e*-Safety-initiative;

c) that the 79 GHz frequency band (77-81 GHz) has been designated as the permanent band for SRR equipment (ECC Decision (04)03 of 19 March 2004 [2]);

d) that narrow-band vehicular radar systems operating at 24 GHz in accordance with the conditions given in ERC Recommendation 70-03 [1] are not under the scope of this ECC Decision;

e) that the compatibility studies are given in ECC Report 023 [3], which set out the technical parameters that are described in ANNEX 1 and ANNEX 2;

f) that the period before the reference date of 1 July 2013 allowed the first product lines of vehicles on the European market to be equipped with 24 GHz SRR systems (within 21.65-26.65 GHz) while ensuring protection of radio services in the band. After this reference date all new SRR equipment placed on the market in Europe must use the 79 GHz band (see ECC Decision (04)03 [2]) or alternative permitted technical solutions while existing 24 GHz equipment (within 21.65-26.65 GHz) may still operate to the end of lifetime of the vehicles;

g) that ETSI has developed the harmonised European standard EN 302 288 [5] for SRR equipment operating in the 24 GHz range;

h) that SRR-equipment is not considered as a safety of life applications in accordance with the ITU Radio Regulations. SRR in the 24 GHz band must operate on a non-interference and non-protected basis in accordance with the ITU Radio Regulations [6];

i) that in EU/EFTA countries the radio equipment that is under the scope of this Decision shall comply with the Radio Equipment Directive (2014/53/EU [7]). Conformity with the essential requirements of the Directive may be demonstrated by compliance with the applicable harmonised European standard(s), cited in the Official Journal of the European Union (OJEU), or by using the other conformity assessment procedures set out in the Directive;

j) that two reference dates were defined for the frequency bandwidths available for use by wideband SRR:

   a. 21.65-26.65 GHz until 30 June 2013,

   b. 24.25-26.65 GHz until 1 January 2018; this date is extended by 4 years for SRR equipment mounted on motor vehicles for which a type-approval application was granted before 1 January 2018,

DECIDES

1. that for the purpose of this Decision, a SRR is defined as a radio communication equipment that falls in the general category of vehicular radar systems and provides collision mitigation and traffic safety applications;
2. that wideband SRR devices intended to operate within the band 21.65-26.65 GHz shall not be installed after 1 January 2022;

3. that the technical requirements detailed in ANNEX 1 apply to SRR devices operating within the band 21.65-26.65 GHz;
4. that the technical requirements detailed in ANNEX 2 apply to SRR devices operating within the band 24.25-26.65 GHz;
5. that SRR devices intended to operate in the band 24.25-26.65 GHz may only operate on motor vehicles for which a type-approval application was granted before 1 January 2018;
6. that the temporary frequency designations for SRR equipment are on a non-interference and non-protected basis;
7. that this Decision enters into force on 1 June 2012;
8. that the preferred date for implementation of this Decision shall be 1 September 2012;
9. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when the Decision is nationally implemented."

Note:

Please check the Office documentation database https://docdb.cept.org for the up to date position on the implementation of this and other ECC Decisions.

ANNEX 1: TECHNICAL REQUIREMENTS FOR SRR DEVICES OPERATING WITHIN THE BAND 21.65-26.65 GHz

1. The frequency band 21.65-26.65 GHz is designated for the Ultra Wide Band component of Automotive Short Range Radars (SRR) devices, with a maximum mean e.i.r.p. density of -41.3 dBm/MHz and a peak e.i.r.p. density of 0 dBm/50MHz, until the reference date 30 June 2013.

2. The frequency band 24.05 to 24.25 GHz is designated for the narrow-band emission mode/component, which may only consist of an unmodulated carrier, with a maximum peak power of 20 dBm e.i.r.p and a duty cycle limited to 10% for peak emissions higher than -10 dBm e.i.r.p.

3. SRR transmitting in the band 23.6-24 GHz with a mean e.i.r.p density higher than -74 dBm/MHz or in the bands 22.01-22.5 GHz, 22.81-22.86 GHz and 23.07-23.12 GHz with a mean e.i.r.p. density higher than -57 dBm/MHz, shall be fitted with an automatic deactivation mechanism to ensure protection of radio astronomy sites. Moreover, within the band 23.6-24 GHz, emissions that appear 30° or greater above the horizontal plane shall be attenuated by at least 30 dB up to 1 July 2013.

4. SRR devices shall be de-activated within the specified separation distance from the radio astronomy sites referenced in ANNEX 3.

5. After 30 June 2013, the 79 GHz range for new SRR systems, or alternative permitted technical solutions (e.g. according to ANNEX 2), must be used for road vehicle collision mitigation and traffic safety applications, while all existing equipment detailed in this annex may still operate to the end of lifetime of the vehicles.

ANNEX 2: TECHNICAL REQUIREMENTS FOR SRR DEVICES OPERATING WITHIN THE BAND 24.25-26.65 GHz

1. The frequency band 24.25-26.65 GHz is designated for the Ultra Wide Band component of Automotive Short Range Radars (SRR) devices, with a maximum mean e.i.r.p. density of -41.3 dBm/MHz and a peak e.i.r.p. density of 0 dBm/50MHz, until the reference date 1 January 2018 (this date is extended by 4 years for SRR equipment mounted on motor vehicles for which a type-approval application has been submitted and has been granted before 1 January 2018).

2. The maximum emitted power for the out-of-band emission in the band 23.6 GHz to 24 GHz shall not exceed -74 dBm/MHz e.i.r.p. Moreover, any emissions within the 23.6 GHz to 24 GHz band that appear 30° or greater above the horizontal plane shall be kept to a minimum considering typical antenna elevation pattern as depicted in ECC Report 158, figure 15 [8].

3. After 1 January 2018 (this date is extended by 4 years for SRR equipment mounted on motor vehicles for which a type-approval application has been submitted and has been granted before 1 January 2018), the 79 GHz range for new SRR systems, or alternative permitted technical solutions, must be used for road vehicle collision mitigation and traffic safety applications, while all existing equipment detailed in this annex may still operate to the end of lifetime of the vehicles.

ANNEX 3: LIST OF RADIO ASTRONOMY SITES FOR WHICH AUTOMATIC DEACTIVATION FOR SRR DEVICES OPERATING IN THE BAND 21.65-26.65 GHz IS REQUIRED WITH GEOGRAPHIC COORDINATES AND RELATED SEPARATION DISTANCE

Country	Name of the station	Geographic Latitude	Geographic Longitude	Separation distance (km)
France	Plateau de Bure	44°38'01" N	05°54'26" E	35
Germany	Effelsberg	50°31'32" N	06°53'00" E	6.5
Spain	Yebes	40°31'27" N	03°05'22" W	15
	Robledo	40°25'38" N	04°14'57" W	7
Finland	Metsähovi	60°13'04" N	24°23'37" E	7
	Tuorla	60°24'56" N	22°26'31" E	5
Italy	Medicina	44°31'14" N	11°38'49" E	20
	Noto	36°52'34" N	14°59'21" E	8
	Sardinia	39°29'50" N	09°14'40"E	15
UK	Cambridge	52°09'59" N	00°02'20" E	9
	Darnhall	53°09'22" N	02°32'03" W	5
	Jodrell Bank	53°14'10" N	02°18'26" W	9
	Knockin	52°47'24" N	02°59'45" W	5
	Pickmere	53°17'18" N	02°26'38" W	5
Poland	Kraków–Fort Skala	50°03'18" N	19°49'36" E	1
	Toruń - Piwnice	52°54'48" N	18°33'30" E	1
Sweden	Onsala	57°23'45" N	11°55'35" E	12
Russia	Dmitrov	56°26'00" N	37°27'00" E	35
	Kalyazin	57°13'22" N	37°54'01" E	35
	Pushchino	54°49'00" N	37°40'00" E	35
	Zelenchukskaya	43°49'53" N	41°35'32" E	35
Switzerland	Bleien	47°20'26" N	08°06'44" E	3
Latvia	Ventspils	57°33'12" N	21°51'17" E	8.5
Hungary	Penc	47°47'22" N	19°16'53" E	2

ANNEX 4: LIST OF REFERENCES

[1] ERC Recommendation 70-03: “Relating to the use of Short Range Devices (SRD)”, approved October 1997, latest amended November 2021

[2] ECC Decision (04)03: “the frequency band 77-81 GHz to be designated for the use of Automotive Short Range Radars”, approved March 2004

[3] ECC Report 023: Compatibility of automotive collision warning Short Range Radar operating at 24 GHz with FS, EESS and Radio Astronomy, approved May 2003

[4] Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive)

[5] ETSI EN 302 288: Short Range Devices; Transport and Traffic Telematics (TTT); Ultra-wideband radar equipment operating in the 24,25 GHz to 26,65 GHz range; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

[6] ITU Radio Regulations, Edition of 2020

[7] 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

[8] ECC Report 158: The impact of SRR 26 GHz applications using Ultra-Wide-Band (UWB) Technology on Radio Services, approved February 2011