



Bundesnetzagentur ncy

Federal Network Agency for Electricity, Gas,
Telecommunications, Post and Railways

SSB FL 029

Interface specification for ground-based primary radar systems for flight navigation radio

Edition: Februarv 2024

Die Notifizierung ist bei der Kommission unter der Nr. 2024/0116/D registriert.

Notified in accordance with Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (OJ L 241, 17.9.2015, p. 1).

1 General information

Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 (OJ L 153/62) 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 was transposed in the Federal Republic of Germany by the Act on the making available of radio equipment on the market (Radio Equipment Act – FuAG) of 27 June 2017 (Federal Law Gazette (BGBl.) I No 42, p. 1947), last amended by Article 52 of the Act of 23 June 2021 (BGBl. I No 35, p. 1858).

Pursuant to § 33(1) FuAG, the Federal Network Agency shall provide specific and appropriate specifications of the radio interfaces as regards radio equipment operated in frequency bands for which the conditions of use are not harmonised throughout the Community.

This interface specification (SSB) contains information necessary to enable the manufacturer to carry out the relevant tests in relation to the essential requirements applicable to the relevant radio equipment in accordance with the provisions of FuAG § 4(2) and, where applicable, § 4(3).

Furthermore, radio equipment must be designed in such a way that other basic requirements under § 4(1)(1) and (2) FuAG are observed.

For the commissioning and operation of radio equipment, the provisions concerning frequency allocation, in particular those contained in Part 6 of the Telecommunications Act (TKG) of 23 June 2021 (Federal Law Gazette I No 35, p. 1858), last amended on 1 January 2024 by Article 5 of the Act of 14 March 2023 (Federal Law Gazette I No 71), remain unaffected.

The Ordinance on the Detection Procedure for Limiting Electromagnetic Fields (BEMFV) of 20 August 2002 (OJ I No 60, p. 3366), last amended on 4 July 2017 by Article 3(3) of the Act of 27 June 2017 (OJ I No 42, p. 1947), must be complied with.

The Federal Network Agency shall order the enactment of the interface specification in its Official Gazette and publish its reference therein; only the German edition is binding.

2 Scope of application

This interface description describes the basic requirements relating to FuAG § 4(2) for radio equipment for ground-based primary radar systems for air navigation radio.

Radio equipment within the meaning of this interface specification is to be used for its intended purpose and operated in accordance with the manufacturer's instructions. Directive 2014/53/EU requires manufacturers to provide radio equipment users with appropriate information to enable them to operate the radio equipment as intended and in accordance with the provisions of said Directive. This information shall also include appropriate instructions on cabling and antenna types to be used in conjunction with the radio equipment.

This interface specification replaces SSB FL 016, June 2013 edition, notified under 2013/0517/D.

3 Documents and contact information:

The following cited documents are necessary for the application of this document. For dated references, only the referenced edition of the document shall apply. For undated references, the most recent edition of the referenced document (including any amendments) shall apply.

Presumption of conformity may only be based on versions of harmonised European standards that are included in the current list of harmonised standards within the framework of Directive 2014/53/EU and have been published by the European Commission in the Official Journal of the EU.

- Frequency plan in accordance with the Telecommunications Act (TKG) on the distribution of the frequency range from 0 kHz to 3000 GHz among spectrum usages and on the definitions for such use
Published by the Federal Network Agency
- Radio Regulations¹ (VO Funk),
International Telecommunications Union (ITU), Geneva
(Règlement des radiocommunications, Union internationale des télécommunications (UIT), Genève)
- ITU-R M.1314
Reduction of unwanted emissions of radar systems operating above 400 MHz
- ITU-R M.1372
Efficient use of the radio spectrum by radar stations in the radiodetermination service
- ITU-R M.1461
Procedures for determining the potential for interference between radars operating in the radiodetermination service and systems in other services
- ITU-R SM.1045
Frequency tolerance of transmitters
- ETSI EN 303 364-2
Primary Surveillance Radar (PSR); **Harmonised Standard** for access to radio spectrum; Part 2: Air Traffic Control (ATC) PSR sensors operating in the frequency band 2 700 MHz to 3 100 MHz (S band)
- ETSI EN 303 364-3
Primary Surveillance Radar (PSR); **Harmonised Standard** for access to radio spectrum; Part 3: Air Traffic Control (ATC) PSR sensors operating in the frequency band 8 500 MHz to 10 000 MHz (X band)
- CEPT/ERC/REC 74-01
Unwanted emissions in the spurious domain
- CEPT/ECC/REC (02)05
Unwanted emissions

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¹ The Radio Regulations are available in Arabic, Chinese, English, French, Russian and Spanish. In all cases of dispute or doubt, the French text shall prevail.

4 Technical interface requirements

This SSB includes the technical interface requirements for primary radars in the flight navigation radio service in the following frequency ranges:

Table 1: Primary radar in the frequency range 1.25 – 1.35 GHz

Table 2: Primary radar in the frequency range 2.70 – 2.90 GHz

Table 3: Primary radar in the frequency range 9.00 – 9.50 GHz

Table 1: Primary radar in the frequency range 1.25 – 1.35 GHz				
	No	Parameter	Description (Description)	Comments (Comments)
Normative section	1	Radio services (Radiocommunication Service)	AERONAUTICAL RADIONAVIGATION SERVICE	
	2	Intended use/Application (Application)	Primary radar (Primary Surveillance Radar - PSR)	Primary radar for the surveillance of air traffic
	3	Frequency band (Frequency band)	1.25 – 1.26 GHz 1.34 – 1.35 GHz	
	4	Channel assignment (Channelling)		
	5	Modulation/occupied bandwidth (Modulation/Occupied bandwidth)	P0N--, G0N--, Q0N--, F0N-- Pulse modulation, phase modulation, pulse compression, frequency modulation	
	6	Direction/separation (Direction/Separation)		
	7	Transmission power/power density (Transmit power/Power density)	The value to be used is determined by the frequency allocation.	
	8	Channel access and assignment regulations (Channel access and occupation rules)		
	9	Approval procedure (Authorisation regime)	Individual allocation	
	10	Additional essential requirements (Additional essential requirements)	Sectorblanking must be possible	Explanation: For troubleshooting
	11	Frequency planning assumptions (Frequency planning assumptions)		
Information section	12	Planned changes (Planned changes)	Note 1	
	13	References (References)	ITU-R M.1314, ITU-R M.1372, ITU-R M.1461, ITU-R SM.1045, CEPT/ERC/REC 74-01, ECC/REC (02)05	
	14	Notification number (Notification number)	2024/0116/DE	
	15	Notes (Remarks)		

Note 1:

In order to improve the efficient and interference-free use of the frequency spectrum, for newly developed and technically revised radar systems, the development target for unwanted emissions is to be met according to ECC/REC (02)05 Table 3 instead of the limit values in Table 1 of ECC/REC (02)05.

Table 2: Primary radar in the frequency range 2.70 – 2.90 GHz

	No	Parameter (<i>Parameter</i>)	Description (<i>Description</i>)	Comments (<i>Comments</i>)
Normative section	1	Radio services (<i>Radiocommunication Service</i>)	AERONAUTICAL RADIONAVIGATION SERVICE	
	2	Intended use/Application (<i>Application</i>)	Primary radar (Primary Surveillance Radar - PSR)	Primary radar for observation of air traffic
	3	Frequency band (<i>Frequency band</i>)	2.70 – 2.90 GHz	
	4	Channel assignment (<i>Channelling</i>)		
	5	Modulation/occupied bandwidth (<i>Modulation/Occupied bandwidth</i>)	P0N--, G0N--, Q0N--, F0N-- Pulse modulation, phase modulation, pulse compression, frequency modulation	
	6	Direction/separation (<i>Direction/Separation</i>)		
	7	Transmission power/power density (<i>Transmit power/Power density</i>)	The value to be used is determined by the frequency allocation.	
	8	Channel access and assignment regulations (<i>Channel access and occupation rules</i>)		
	9	Approval procedure (<i>Authorisation regime</i>)	Individual allocation	
	10	Additional essential requirements (<i>Additional essential requirements</i>)	Sectorblanking must be possible	Explanation: For troubleshooting
	11	Frequency planning assumptions (<i>Frequency planning assumptions</i>)		
Information section	12	Planned changes (<i>Planned changes</i>)	Note 2	
	13	References (<i>References</i>)	ITU-R M.1314, ITU-R M.1372, ITU-R M.1461, ITU-R SM.1045, ETSI EN 303 364-2, CEPT/ERC/REC 74-01, ECC/REC (02)05	
	14	Notification number (<i>Notification number</i>)	2024/0116/DE	
	15	Notes (<i>Remarks</i>)		

Note 2:

In order to improve the efficient and interference-free use of the frequency spectrum, for newly developed and technically revised radar systems, the development target for unwanted emissions is to be met in accordance with ECC/REC (02)05 Table 3 instead of the limit values in Table 1 of ECC/REC (02)05 (reflected also in ETSI EN 303 364-2).

Table 3: Primary radar in the frequency range 9.00 – 9.50 GHz

	No	Parameter (Description)	Description (Description)	Comments (Comments)
Normative section	1	Radio services (Radiocommunication Service)	AERONAUTICAL RADIONAVIGATION SERVICE	
	2	Intended use/Application (Application)	Primary radar (Primary Surveillance Radar - PSR)	Primary radar for observation of air traffic
	3	Frequency band (Frequency band)	9.00 – 9.20 GHz 9.30 – 9.50 GHz	
	4	Channel assignment (Channelling)		
	5	Modulation/occupied bandwidth (Modulation/Occupied bandwidth)	P0N--, G0N--, Q0N--, F0N-- Pulse modulation, phase modulation, pulse compression, frequency modulation	
	6	Direction/separation (Direction/Separation)		
	7	Transmission power/power density (Transmit power/Power density)	The value to be used is determined by the frequency allocation.	
	8	Channel access and assignment regulations (Channel access and occupation rules)		
	9	Approval procedure (Authorisation regime)	Individual allocation	
	10	Additional essential requirements (Additional essential requirements)	Sectorblanking must be possible	Explanation: For troubleshooting
	11	Frequency planning assumptions (Frequency planning assumptions)		
Information section	12	Planned changes (Planned changes)	Note 3	
	13	References (References)	ITU-R M.1314, ITU-R M.1372, ITU-R M.1461, ITU-R SM.1045, ETSI EN 303 364-3, CEPT/ERC/REC 74-01, ECC/REC (02)05	
	14	Notification number (Notification number)	2024/0116/DE	
	15	Notes (Remarks)		

Note 3:

In order to improve the efficient and interference-free use of the frequency spectrum, for newly developed and technically revised radar systems, the development target for unwanted emissions is to be met in accordance with ECC/REC (02)05 Table 3 instead of the limit values in Table 1 of ECC/REC (02)05 (reflected also in ETSI EN 303 364-3).