

RECOMMENDATION ITU-R M.1830

Technical characteristics and protection criteria of aeronautical radionavigation service systems in the 645-862 MHz frequency band

(2007)

Scope

This Recommendation complements the technical characteristics of aeronautical radionavigation systems in the frequency band 645-862 MHz for relations not covered by RRC-06 and can be used by concerned administrations as technical guidelines for bilateral discussion and for estimations of compatibility with other radiocommunication services of administrations not party to the RRC-06 Agreement.

The ITU Radiocommunication Assembly,

considering

- a) that the aeronautical radionavigation service operates on a primary basis in the 645-862 MHz frequency band in a number of countries under No. 5.312 of the Radio Regulations (RR);
- b) that the 645-862 MHz frequency band is also used by other services on a primary basis,

recognizing

- a) that the radionavigation service is a safety service as specified by RR No. 1.59;
- b) that RR No. 4.10 states that the safety-of-life aspects of the radionavigation and other safety services require special measures to ensure their freedom from harmful interference (see also RR No. 1.169);
- c) that there is increasing need to ensure compatibility between the radionavigation services and other services which share their allocated bands;
- d) that the procedures and methodology for analysing compatibility between radars and systems in other services are contained in Recommendation ITU-R M.1461,

recommends

- 1** that the technical characteristics and protection criteria of aeronautical radionavigation systems in the band 645-862 MHz contained in Annexes 1 and 2 should be used in the assessment of compatibility with other services.

Annex 1

Technical characteristics of aeronautical radionavigation service systems in the 645-862 MHz frequency band

In accordance with RR No. 5.312, the 645-862 MHz band is allocated in a number of countries to the aeronautical radionavigation service (ARNS) on the primary basis. Within this service several types of radionavigation systems are used, including:

- radio systems for short-range navigation (RSBN);
- secondary radars for the air traffic control (ATC) which includes the ground radar and the onboard transponder;
- primary airfield and route radars for the ATC.

All specified means are used to support navigation and air traffic control functions.

The basic characteristics for different types of aeronautical radionavigation stations operating in the band 645-862 MHz are presented in Table 1.

TABLE 1

Aeronautical radionavigation systems characteristics in the band 645-862 MHz

Type of station Characteristics	RSBN	RLS 2 (Type 1)		RLS 2 (Type 2)		RLS 1 (Type 1)	RLS 1 (Type 2)
Application	“Air-Ground”	Secondary radars – Type 1 (air traffic control)		Secondary radars – Type 2		Primary radars – Type 1	Primary radars – Type 2
Transmitter characteristics							
Station name	Aircraft transmitter	Ground radar transmitter	Aircraft transponder transmitter	Ground radar transmitter	Aircraft transponder transmitter	Ground radar transmitter	Ground radar transmitter
Place of station	Aircraft	Airfields	Aircraft	Airfields	Aircraft	Airfields	Airfields
Maximum effective radiated pulse power (e.r.p.) (dBW)	30.5	48	35	69.5	34.5	82	82
Pulse power (dBW)	27	31	32	40	31	52.5	52.5
Mean power (dBW)	0.5	1	14	19.5	10.5	19.5	19.5
Off-duty ratio	447	1 000	63.1	112	112	1 995	1 995
Pulse repetition cycle (ms)	2.3	1.3	0.6	1.8	1.8	1.8	1.8
Pulse length (µs)	5.1	1.3	8.7	16	16	0.9-2	0.9-2
Necessary emission bandwidth (MHz)	3/0.7	4	4	3	8	6	3
Class of emission	P0X/PXX	K0X	K0X	M1X	M1X	P0N	P0N
Operating frequencies (MHz)	772, 776, 780, 784, 788, 792, 796, 800, 804, 808	668	668	835, 836, 837.5	740	833, 835, 836, 858	844, 847, 853, 859
Antenna height (m)	0 to 10 000	10	0 to 10 000	10	0 to 10 000	10	10
Maximum antenna gain (dBi)	3.5	17	3	29.5	3.5	29.5	29.5
Antenna pattern	ND	3 dB beamwidth: vert. pl. = 28° hor. pl. = 4°	ND	3 dB beamwidth: vert. pl. = 45° hor. pl. = 3-5°	ND	3 dB beamwidth: vert. pl. = 45° hor. pl. = 4°	3 dB beamwidth: vert. pl. = 45° hor. pl. = 4°