

ENR 4 AIDES/SYSTEMES DE RADIONAVIGATION

RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 AIDES DE RADIONAVIGATION EN-ROUTE

RADIO NAVIGATION AIDS EN-ROUTE

Les aides à la navigation utilisées pour les opérations en cheminement libre (FRA) sont présentées selon leur fonction. Une aide à la navigation peut avoir une ou plusieurs fonctions dans un ou plusieurs volumes FRA. La fonction abrégée entre parenthèses est indiquée dans la colonne "Observations" après le volume FRA concerné.

NavAids used for Free Route operations (FRA) are categorized according their function. One nvaaid may have one or more functions in one several FRA volumes. The function is shown in column "Remarks" abbreviated in parentheses after the FRA volume concerned.

FRA (A)	Point de connexion d'arrivée FRA / FRA arrival connecting point
FRA (D)	Point de connexion de départ FRA / FRA departure connecting point
FRA (E)	Point d'entrée horizontale FRA / FRA horizontal entry point
FRA (I)	Point intermédiaire FRA / FRA intermediate point
FRA (X)	Point de sortie horizontale FRA / FRA horizontal exit point

Station	Service	ID	FREQ	HOR	Coordonnées Portée Coverage	ALT	Situation Location	Exploitant Operator	Observations Remarks
ABBEVILLE	DME	ABB	108.45 MHz Ch 21Y	H24	50°08'06.5"N 001°51'16.9"E 60NM FL500				
AGEN-Gaudonville	DME	AGN	114.8 MHz Ch 95X	H24	43°53'16.9"N 000°52'22.3"E 120NM(315°..75°) 100NM FL500	896 ft			FRA(I): LFFRASW; FRA(A): LFFRASW, LEPP, LERJ, LESO, LFBA, LFBD, LFBE, LFBM, LFBP, LFBT, LFBZ, LFCC, LFCG, LFCL, LFCN, LFCQ, LFCW, LFCX, LFDA, LFDB, LFDH, LFDJ, LFDX, LFMW; FRA(D): LFFRASW, LFBA, LFBD, LFBM, LFCC, LFCN, LFDA, LFDH, LFDJ
AJACCIO-Coti Chiavari	VOR- DME	AJO	114.8 MHz Ch 95X	H24	41°46'13.9"N 008°46'28.8"E 200NM(90°..270°) 100NM FL500	2142 ft			FRA(IA): LFFRASE, LIRJ, LIRP, LIRS, LIQS, LFKB, LFKC, LIEA, LIEO , FL195- 660; FRA(ID): LFFRASE, LFKB, LFKC, LIEO, FL195-660
AMBOISE	DME	AMB	113.7 MHz Ch 84X	H24	47°25'44.1"N 001°03'52.0"E 80NM FL500	387 ft			Pas de VOR associé. No associated VOR.
ANGERS	DME	ANG	111.05 MHz Ch 47Y	H24	47°32'12.7"N 000°51'06.6"W 150NM FL500	304 ft			Pas de VOR associé. No associated VOR.
AVIGNON CAUMONT	NDB	CM	369 kHz	H24	43°54'29.8"N 004°54'19.4"E 20NM	160 ft	143°/750m DTHR 17		
AVIGNON Pujaut	VOR- DME	AVN	114.6 MHz Ch 93X	H24	43°59'43.3"N 004°44'47.0"E 60NM FL500	159 ft			FRA(D): LFFRASE, LFLU, FL195-660
AVORD	NDB	AVD	288.5 kHz	H24	47°07'14.4"N 002°47'58.6"E 50NM FL500	695 ft			
	TACAN	AVD	Ch 43X	H24	47°03'29.1"N 002°37'47.5"E 150NM FL600	578 ft			
BALE-MULHOUSE	VOR- DME	BLM	117.45 MHz Ch 121Y	H24	47°37'58.1"N 007°29'58.2"E 100 NM(270°..360°) 60NM FL500	886 ft	333°/1 NM THR 15		FRA(A): LFFRAE, LSMD, LSZH
BASTIA PORETTA	VOR- DME	BTA	114.15 MHz Ch 88Y	H24	42°34'24.9"N 009°28'29.4"E 80NM FL500	36 ft	340°/1170m THR 16		FRA(ID): LFFRASE, LFKF, LFKJ, LFKO, FL195-660
BIARRITZ PAYS BASQUE	VOR- DME	BTZ	114.15 MHz Ch 88Y	H24	43°27'59.9"N 001°30'37.0"W 100NM(315°..45°) 60NM FL500	276 ft	198°/223m THR 27		FRA(I): LFFRASW; FRA(AD): LFFRASW, LEPP, LERJ, LESO, LFBM, LFBP, LFBT, LFCN, LFDA

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DEAUVILLE NORMANDIE	VOR	DVL	110.2 MHz	H24	49°18'38.7"N 000°18'45.8"E 60NM FL500	497 ft	117°/6,6NM DTHR 30		
DIJON-LONGVIC	VOR- DME	DJL	111.45 MHz Ch 51Y	H24	47°16'14.8"N 005°05'50.4"E 80NM(015°..75°), 100NM(105°..165°) 60NM FL500				FRA(IA): LFFRANE, LFPO, LFPN, LFPV, LFPG, LFPB, LFLA, LFOB, LFSI, LFOK, LFPM, FL195-660; FRA(ID): LFFRANE, LFSG, FL195-660
DINARD PLEURTUIT SAINT MALO	VOR- DME	DIN	114.3 MHz Ch 90X	H24	48°35'09.8"N 002°04'56.4"W 80NM FL500	213 ft	337°/899m THR 35		Radial 338 hors tolérances
EPERNON	VOR- DME	EPR	115.65 MHz Ch 103Y	H24	48°37'32.5"N 001°39'23.6"E 60NM FL500				
EPINAL MIRECOURT	VOR	EPL	113 MHz	H24	48°19'04.2"N 006°03'33.9"E 60NM FL500	1154 ft			FRA(IA): LFFRAE, EDDR, EDDS, EDFH, EDFM, EDHL, EDRZ, EDSB, EDSE, EDTD, EDTL, EDTM, ELLX, ETAD, LFGA, LFJL, LFPB, LFPG, LFPN, LFPO, LFPT, LFPV, LFQP, LFSI, LFST; FRA(ID): LFFRAE, EDDS, EDHL, EDSB, EDSE, EDTD, EDTL, EDTM, ETAR, LFEP, LFGA, LFGF, LFGJ, LFGI, LFGQ, LFJL, LFJY, LFLH, LFOK, LFOB, LFOE, LFQP, LFSD, LFSI, LFSN, LFSO, LFST
EVREUX FAUVILLE	TACAN	EVX	Ch 71X	H24	49°01'42.7"N 001°12'50.6"E	450 ft			
GAILLAC-Castelneau de Montmirail	DME	GAI	108.5 MHz Ch 22X	H24	43°57'14.6"N 001°49'27.0"E 130NM FL500	979 ft			FRA(I) : LFFRASW ; FRA(A) : LFFRASW, LFCC, LFCI, LFCK, LFCR, LFCU, LFDJ, LFDS, LFGM, LFGN, LFHA, LFHO, LFHP, LFHQ, LFHY, LFKM, LFLC, LFLN, LFLO, LFLV, LFLW, LFLZ, LFME, LFMI, LFMK, LFMP, LFMS, LFMT, LFMU, LFNG, LFQF, LFSL, LFTW, LESU ; FRA(D) : LFFRASW, LFBA, LFCC, LFCI, LFCK, LFCR, LFDJ, LFMK, LFMP, LFMU
GROSTENQUIN	VOR- DME	GTQ	111.25 MHz Ch 49Y	H24	48°59'11.2"N 006°42'58.4"E 100NM(135°..225°) 60NM FL500	1057 ft			FRA(IA): LFFRAE, LFEP, LFEV, LFGA, LFGF, LFGI, LFGJ, LFGQ, LFLH, LFOK, LFOB, LFQM, LFQW, LFSA, LFSD, LFSI, LFSM, LFST, LFSX; FRA(ID): LFFRAE, EDDK, EDFH, EDSB, EDTL, ELLX, LFST, LFGA
HERICOURT	NDB	HR	289 kHz	H24	47°33'42.0"N 006°43'56.1"E 30NM				FRA(D): LFFRAE, LSGC, LSGK, LSMA, LSME, LSMP, LSTS, LSZB, LSZC, LSZG, EVEN FL
HYERES LE PALYVESTRE	TACAN	HYE	Ch 27X	H24	43°06'01.1"N 006°08'51.5"E 100NM FL500	7 ft	020°/353 m ARP		
ISTRES LE TUBE	TACAN	ITR	Ch 104X	H24	43°31'33.9"N 004°55'36.9"E FL600	77 ft	026°/463 m ARP		
JERSEY	VOR- DME	JSY	112.2 MHz Ch 59X	H24	49°13'16.0"N 002°02'46.2"W				FRA(EX): LFFRANW, FL195- 660; voir AIP U.K / see AIP U.K
L' AIGLE	VOR- DME	LGL	112.7 MHz Ch 74X	H24	48°47'26.2"N 000°31'49.0"E 60NM FL500	971 ft			
LA TOUR DU PIN-Lyon Est	DME	LTP	115.55 MHz Ch 102Y	H24	45°29'20.3"N 005°26'20.6"E 80NM FL500	2165 ft			FRA(IA): LFFRASE, LFXA, LFLM, LFHS, FL195-660; FRA(ID): LFFRASE, LFLV, LFXA, LFLM, LFHS, LFNA, FL195-660
LANDIVISIAU	TACAN	LDV	Ch 98Y	H24	48°31'41.8"N 004°09'22.7"W				
LANVEOC POULMIC	TACAN	BST	Ch 94X	H24	48°17'04.3"N 004°27'07.6"W				
LE LUC LE CANNET	VOR- DME	LUC	113 MHz Ch 77X	H24	43°22'58.0"N 006°15'21.3"E		267°/5,37 NM THR 09		
LEMBEYE	VOR	LMB	111.8 MHz	H24	43°28'00.0"N 000°01'06.3"W 60NM(135°..225°) 40NM FL250	980 ft			

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LILLE LESQUIN	VOR-DME	LEQ	109 MHz Ch 27X	H24	50°33'42.4"N 003°05'21.0"E 40NM FL250	163 ft			
LIMOGES	VOR-DME	LMG	114.5 MHz Ch 92X	H24	45°48'57.3"N 001°01'32.1"E 80NM(315°.60°) 100NM FL500	1375 ft			FRA(I): LFFRASW; FRA(A): LFFRASW, LFBA, LFBD, LFBE, LFBG, LFBK, LFBV, LFBX, LFLX; FRA(D): LFFRASW, LFBG, LFBV, LFBO, LFBP, LFBT, LFBX, LFCC, LFCK, LFCR, LFDH, LFSL
LORIENT LANN BIHOUE	TACAN	LOR	Ch 105X	H24	47°45'41.3"N 003°26'28.2"W 100NM FL250	171 ft	320°/138 m ARP		
LUXEUIL	VOR	LUL	117.1 MHz	H24	47°41'17.8"N 006°17'44.1"E 80NM				FRA(IA): LFFRAE, LFEP, LFGF, LFGJ, LFLG, LFGQ, LFGW, LFGY, LFJL, LFJY, LFLH, LFOK, LFQB, LFQE, LFSD, LFSG, LFSI, LFSN, LFSS, LFST, EDSB, EDTL; FRA(ID): LFFRAE, LFEB, LFGB, LFQM, LFQW, LFSB, LFSM, LFSX, LSGC, LSGK, LSMA, LSME, LSMP, LSZB, LSZC, LSZG EVEN FL from LSAGACC to LFEECTA
LUXEUIL SAINT SAUVEUR	TACAN	LXI	Ch 19X	H24	47°46'59.4"N 006°21'25.6"E 60NM FL250	883 ft			
LYON SAINT EXUPERY	VOR-DME	LSE	114.75 MHz Ch 94Y	H24	45°44'43.9"N 005°05'26.1"E 140NM(135°.255°) 100NM FL500	820 ft			FRA(IA): LFFRAE, LFMH, FL195-660; FRA(ID): LFFRAE, LFLB, LFLP, LFMH, LFHP, LFGF, LFGJ, LFLH, LFSD, LFHA, LSGG, LFLI, LFHN, LSGL, LSGP, FL195-660
MARSEILLE PROVENCE	NDB	OB	395 kHz	HO	43°13'47.4"N 005°39'55.5"E 50NM	1562 ft			FRA(D): LFFRAE, LFME, FL195-660
	VOR-DME	MRM	108.8 MHz Ch 25X	H24	43°22'38.4"N 005°19'35.2"E 60NM(270°.90°) 100NM FL500	771 ft	124°/5.6NM DTHR 31R		Fluctuation occasionnelle du signal VOR dans le secteur Sud du moyen. / Occasional fluctuation of the VOR signal in the southern sector of the navaid. FRA(IA): LFFRAE, LFLU, FL195-660; FRA(ID): LFFRAE, LFTH, FL195-660
MARTIGUES	VOR-DME	MTG	117.3 MHz Ch 120X	H24	43°23'10.7"N 005°05'12.6"E 200NM(135°.225°) 100NM FL500	650 ft			FRA(IA): LFFRAE, LFMS, LFNH, LFHO, FL195-660; FRA(ID): LFFRAE, LFMS, LFNH, LFLU, LFHO, LFMT, LFTW, LFNG, FL195-660
MELUN VILLAROCHE	VOR-DME	MLN	113.6 MHz Ch 83X	H24	48°27'20.8"N 002°48'47.8"E 40NM FL250	104.36 m			
MENDE-Nasbinals	VOR-DME	MEN	115.3 MHz Ch 100X	H24	44°36'30.1"N 003°09'44.7"E 100NM FL500	4514 ft			FRA(I): LFFRASW; FRA(A): LFFRASW, LFHO, LFME, LFMI, LFMS, LFMT, LFMU, LFTW; FRA(D): LFFRASW, LFBF, LFBO, LFBP, LFCI, LFCK, LFCR, LFLC, LFLW
MONTELMAR ANCONI	VOR-DME	MTL	113.65 MHz Ch 83Y	H24	44°33'17.8"N 004°46'47.5"E 100NM FL500	656 ft			FRA(IA): LFFRAE, LFMH, LFHP, LFLI, LFLY, LFLS, LFHV, LFXA, LFLM, LFHS, LFLC, LFHA, LFLJ, LFKA, LFHM, LFLG, LFBK, LFTW, LFMA, LFMY, LFML, LFMQ, LFNA, FL195-660; FRA(ID): LFFRAE, LFMH, LFHP, LFLB, LFLP, LFLI, LFLY, LFLS, LFHA, LFMT, LFTW, LFNG, LFMI, LFMA, LFMY, LFML, LFMQ, LFMV, LFNA, FL195-660

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MONTMEDY-Dun sur Meuse	VOR	MMD	109.4 MHz	H24	49°23'28.5"N 005°07'27.9"E 100NM(45°..135°), 40NM(135°..225°) 60NM FL500	1076 ft			FRA(A): LFFRANE, LFJL, ELLX, EDFH, EDDR, ETAR, ETAD, EDSB, EDRZ, FL195-660; FRA(D): LFFRANE, LFJL, LFST, LFSO, LFSN, LFOA, FL195-660
MONTPELLIER MEDITERRANEE	VOR-DME	FJR	114.45 MHz Ch 91Y	H24	43°34'42.1"N 003°58'29.0"E 80NM(225°..345°) 60NM FL500	7 ft	314°/868m THR 30R		FRA(EXA): LFFRASE, LFMP, FL195-660; FRA(EXT): LFFRASE, LFMU, LFMP, FL195-660 FRA(EX): LFFRASW, FL195-660
MOULINS	VOR-DME	MOU	116.7 MHz Ch 114X	H24	46°42'24.4"N 003°37'54.0"E 80NM FL500	699 ft			FRA(I): LFFRAC; FRA(A): LFFRAC, LFOK, LFLA, LFQB, LFQA, LFGJ, LFSD, LFLC, LFLD, LFOA, LFGM, LFGN, LFHY, LFLN, LFLO, LFQF, LFHJ, LFHS, LFHV, LFHW, LFKL, LFKY, LFLG, LFLI, LFLM, LFLS, LFLU, LFLY, LFMH, LFXA; FRA(D): LFFRAC, LFLD, LFOA, LFOZ, LFOJ, LFOT, LFGJ, LFSD, LFOK, LFLA, LFQA, LFQB, LFHA, LFHQ, LFKM, LFLC, LFLV, LFLZ
NANCY OCHEY	TACAN	NAY	Ch 115X	H24	48°35'01.1"N 005°57'06.6"E	1063 ft			
NANTES ATLANTIQUE	VOR-DME	NTS	115.5 MHz Ch 102X	H24	47°09'39.1"N 001°36'46.7"W 100NM(315°..45°) 150NM FL500		252°/782 m DTHR 21		DME NTS : possibles fausses indications sur courte finale ILS LOC Z et ILS LOC Y RWY 03 LFRS. DME NTS : false indications are possible on short final ILS LOC Z and ILS LOC Y RWY 03 LFRS.
NICE COTE D'AZUR	DME	NIZ	112.4 MHz Ch 71X	H24	43°46'14.3"N 007°15'15.8"E 200NM(135°..225°) 150NM FL500	2822 ft			
	NDB	MUS	428 kHz	H24	43°23'04.5"N 006°36'22.9"E 40NM	1500 ft			
NIMES GARONS	NDB	NG	354 kHz	H24	43°51'25.9"N 004°24'22.6"E 25NM	249 ft	354°/5,34NM THR 18		Situé à NIMES Courbessac. FRA(IA): LFFRASE, LFMI, LFMO, LFMU, LFMV, FL195-660; FRA(ID): LFFRASE, LFMV, LFMO, LFMU, FL195-660
ORLEANS SAINT DENIS DE L'HOTEL	NDB	ORS	322 kHz	H24	47°56'14.6"N 002°14'33.5"E 25NM	432 ft	053°/3,45 NM THR 23		
PERPIGNAN RIVESALTES	VOR-DME	PPG	116.25 MHz Ch 109Y	H24	42°45'01.7"N 002°52'01.7"E 100NM(45°..135°) 80NM FL500	151 ft	131°/603 m THR 15		ALT VOR 128 FRA(I): LFFRASW; FRA(A): LFFRASW, LEGE; FRA(D): LFFRASW, LFCI, LFMK, LFMT, LFMU
POITIERS BIARD	DME	PT	110.95 MHz Ch 46Y	H24	46°35'40.4"N 000°18'53.1"E 25NM FL250	413 ft	191°/375m THR 21		
	VOR	POI	113.3 MHz	H24	46°34'51.6"N 000°17'53.5"E 60NM FL500	424 ft	315°/213m THR 03		FRA(I): LFFRASW; FRA(A): LFFRASW, LFJR, LFOC, LFOD, LFOQ, LFOR, LFOT, LFOV, LFRM; FRA(D): LFFRASW, LFBG, LFJR, LFOD, LFRM
PONTOISE CORMEILLES EN VEXIN	VOR	PON	111.6 MHz	H24	49°05'45.9"N 002°02'09.2"E 60NM (314°..44°) 40NM FL500	318 ft	034°/1113m THR 04		
QUIMPER PLUGUFFAN	VOR-DME	QPR	117.8 MHz Ch 125X	H24	47°57'26.2"N 004°11'05.0"W 150NM FL500	315 ft	229°/1.53 NM THR 27		FRA(A): LFFRANW, LFRB, LFRJ, LFEC, LFRH, LFRH, LFRV, LFRQ; FRA(D): LFFRANW, LFRB, LFRJ, LFEC, LFRH, LFRQ, LFRU, LFRH, LFRV, LFRQ
RAMBOUILLET-Les Bordes	DME	RBT	114.7 MHz Ch 94X	H24	48°39'14.2"N 001°59'39.2"E 110NM(135°..225°) 60NM FL500	604 ft			
REIMS	VOR	REM	112.3 MHz	H24	49°18'41.9"N 004°02'43.3"E 60NM FL500	335 ft			

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RENNES SAINT JACQUES	VOR-DME	REN	109.25 MHz Ch 29Y	H24	48°04'09.3"N 001°44'30.0"W 150NM FL500	126 ft			
ROANNE	VOR-DME	ROA	110.4 MHz Ch 41X	H24	46°03'33.0"N 003°59'57.4"E 55NM	1079 ft	223°/465m THR 19		
ROLAMPONT	DME	RLP	117.3 MHz Ch 120X	H24	47°54'22.7"N 005°14'57.0"E 120NM(105°..165°) 60NM FL500	1490 ft			FRA(I): LFFRAE, FL195-660 FRA(I): LFFRANE, FL195-660
ROUEN VALLEE DE SEINE	VOR	ROU	116.8 MHz	H24	49°27'56.3"N 001°16'50.3"E 40NM FL250	560 ft	040°/5,9NM THR 22		
SAINT DIZIER ROBINSON	TACAN	SDI	Ch 87X	H24	48°38'13.2"N 004°53'21.1"E	447 ft	133°/507 m THR 11		
SAINT TROPEZ	VOR-DME	STP	116.5 MHz Ch 112X	H24	43°13'10.1"N 006°36'06.5"E 200NM(90°..270°) 60NM FL500	1089 ft			FRA(IA): LFFRASE, LFMA, LFMI, LFML, LFMO, LFMQ, LFMV, LFMY, LIMG, LIMJ, FL195-660
SAINTE LEOCADIE	NDB	SAL	418 kHz	H24	42°26'47.9"N 002°00'44.7"E 25NM				
SAVERNE	VOR-DME	SAV	110.45 MHz Ch 41Y	H24	48°47'46.5"N 007°26'52.7"E 60NM FL250	1021 ft			
SOLENZARA	TACAN	SZA	Ch 87X	H24	41°56'14.9"N 009°23'58.4"E 200/60 200NM FL500	10 ft	284°/476m THR 18		
STRASBOURG ENTZHEIM	VOR-DME	STR	115.6 MHz Ch 103X	H24	48°30'19.4"N 007°34'19.1"E 150NM(135°..225°), 60NM(045°..135°) 100NM FL500	577 ft			
TARBES	VOR-DME	TBO	113.9 MHz Ch 86X	H24	43°19'56.0"N 000°08'44.7"E 80NM FL500	1039 ft	037°/10,6 NM THR 20		FRA(I): LFFRASW; FRA(D): LFFRASW, LEPP, LERJ, LESO, LFBZ
THIERS	DME	TIS	117.5 MHz Ch 122X	H24	45°52'54.6"N 003°33'12.9"E 60NM FL250	2258 ft			FRA(EX): LFFRASE, FL195-660 FRA(EX): LFFRASW, FL195-660, EVEN FL for entering aircraft, ODD FL for exiting aircraft
TOULOUSE BLAGNAC	VOR-DME	TOU	117.7 MHz Ch 124X	H24	43°40'51.0"N 001°18'35.3"E 120NM(195°..255°) 70NM FL500	574 ft			FRA(I): LFFRASW; FRA(A): LFFRASW, LFBA, LFBD, LFCK; FRA(D): LFFRASW, LFBM, LFCG, LFCL, LFCQ, LFCW, LFCX, LFDB, LFDH, LFDX, LFMW
TOUSSUS LE NOBLE	VOR	TSU	108.25 MHz	H24	48°45'13.4"N 002°06'08.5"E 100NM(134°..314°) 80NM FL500	547 ft	043°/386m THR 07L		
TROYES BARBEREY	VOR	TRO	116 MHz	H24	48°15'04.4"N 003°57'47.3"E 60NM FL500	861 ft			FRA(IA): LFFRANE, LFQA, LFOJ, LFOZ, LFPG, LFPB, FL195-660