



Fact Sheet

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Von	C MAA
Für	Recipients of NOMIL
Referenz	-
Kopie an	-

Information on 8.33 kHz channel spaced VHF communication

In the past months, discomfort and uncertainty on the subject of 8.33 kHz VHF channel spacing within the SAF have become apparent. This Document intends to clarify facts and effects of the related EU regulations on SAF operations and aircraft equipage.

Background

The VHF air band between 108 and 137 MHz comprises 750 frequencies available for radio transmissions at a channel spacing of 25 kHz. Every VHF frequency is assigned to approximately 10 European users at a time, i.e. no more frequencies on the 25 kHz raster were available in Europe. Therefore, 8.33 kHz-spaced channels were introduced, whose frequencies are located in between the 25 kHz raster. While the bandwidth for reception is 8.33 kHz (or 25 kHz for legacy radios), transmission with either radio type uses 6.6 kHz bandwidth only – ground and airborne, civil and military radios alike. Therefore, the capability in question whether a radio provides 8.33 kHz or 25 kHz channel spacing ultimately relates to its reception bandwidth.

EU-regulation and GAT

After a stepwise introduction of 8.33 kHz channel spacing (1999 above FL 245, 2007 above FL 195), Commission Implementing Regulation (EU) No 1079/2012 specifies requirements for air-ground voice channel spacing of 8.33 kHz below FL 195. Since March 2018, civil aircraft in Switzerland must be equipped with 8.33 kHz radios. From 8 November 2018, ground radios must be 8.33 kHz capable.

Compliance of SAF infrastructure and OAT

Although state aircraft operate within the scope of every state's sovereignty, changes in the civil environment may impose practical and safety constraints as is the case with (EU) No 1079/2012.

This Commission Regulation requires that all state aircraft be equipped with radios featuring 8.33 kHz channel spacing by 31 December 2018 at the latest. If procurement, budgetary, or technical constraints prevent compliance, concerned aircraft fleets shall be equipped no later than 31 December 2020. State aircraft that will be withdrawn from operations by 31 December 2025 are exempt. TH 98 and PC-7 fleets of the SAF do not comply with (EU) No 1079/2012.

Ground radios used by skyguide (sg) and SAF have been receiving (and transmitting) within 8.33 kHz channel spacing for the past two years (BFS-400) or will be compliant shortly. Switzerland as a contracting state of the Chicago Convention is obliged to have due regard for the safety of navigation of civil aircraft. SAF operates adjacent to civil traffic and therefore has to coordinate equipage and operations of those SAF aircraft in lack of 8.33 kHz radios.

Summary of effects and mitigations for SAF flight crews

- I. SAF aircraft, whether equipped with 8.33 kHz or 25 kHz radios, transmit with a bandwidth of 6.6 kHz in the VHF band, and therefore do not interfere with neighboring channels when transmitting;
- II. However, the reception bandwidth of legacy radios spreads over neighboring 8.33 kHz-spaced frequencies:
 - When operating within Switzerland, legacy radios will not be subject to interference, because radio frequencies are deconflicted by Eurocontrol, i.e. no frequencies on the 8.33 kHz raster next to any Swiss-assigned frequency will be allocated in vicinity to Switzerland;
 - However, when operating abroad, legacy radios may be subject to interference.
- III. Contrary to Switzerland, most frequencies in use abroad are not subject to exemptions and the European 8.33 kHz VHF-raster is being populated from March 2018. Non-equipped SAF aircraft will not be able to select such frequencies (i.e. frequencies in between the 25 kHz raster) when operating abroad;
- IV. Non-equipped SAF aircraft fleets are:
 - TH 98 Cougar, equipage to be complete by March 2022 due to budgetary constraints. Non-compliant TH 98s will be withdrawn from operations from February 2021 for overhaul/equipage. Exception: T-337 as prototype is already compliant;
 - TH 98 Cougar VIP version, no equipage planned, currently unknown phase-out due to budgetary evaluations;
 - PC-7, equipage to be completed by 31 December 2025 due to budgetary constraints;
 - PC-9, phased out until 31 December 2025;
 - F-5, phased out until 31 December 2025;
 - ADS 95, phased out until 31 December 2025.
- V. Mitigation measures for operations with non-equipped SAF aircraft:
 - sg, SAF, MAA, and FOCA have obtained exemptions through OFCOM for most VHF frequencies relevant to SAF operations inside Switzerland (e.g. majority of TWR and APP frequencies). Those frequencies are conserved and remain with the respective unit;
 - sg is providing air navigation services to SAF on UHF where necessary.
- VI. On a generic radio, frequencies are selected in two different ways, depending on the installed radio (25 kHz or 8.33 kHz compliant; dialing may be specific to the respective SAF platform though). The following list of examples covers all possible cases:

Exemption requested by Switzerland	Unit	Frequency	ATC pronounces		Dial on 25 kHz radios	Dial on 8.33 kHz radios	Notation on aeronautical publications	Rx bandwidth on 8.33 kHz radios
yes	Bern TWR	121.025	<i>121.025</i>		1-2-1-0-2(-5)	1-2-1-0-2-5	121.025	25 kHz
yes	GRE TWR	120.100	<i>120.1</i>		1-2-0-1-0(-0)	1-2-0-1-0-0	120.1	25 kHz
no	Zürich DEP	125.950	<i>125.955</i>		1-2-5-9-5(-0)	1-2-5-9-5-5	125.955	8.33 kHz
no	Bern CLD (Delivery)	121.900	<i>121.905</i>		1-2-1-9-0(-0)	1-2-1-9-0-5	121.905	8.33 kHz
no	Friedrichshafen TWR	120.075	<i>120.080</i>		1-2-0-0-7(-5)	1-2-0-0-8-0	120.080	8.33 kHz
no	Donaueschingen TWR	126.6917	<i>126.690</i>		not selectable	1-2-6-6-9-0	126.690	8.33 kHz

For details, see: <https://www.eurocontrol.int/sites/default/files/article/content/documents/communications/2016-03-frequency%20table.pdf> or <https://www.eurocontrol.int/sites/default/files/article/content/documents/single-sky/cm/cns-developments/cmac-cns-factsheet-4.pdf>;

- VII. sg no longer accepts ICAO flight plans for non-equipped civil aircraft. Non-equipped SAF aircraft are exempt, but shall be declared as such in item 18 with the entry of "COM/EXM833". For non-equipped SAF aircraft, FIS LW automatically completes item 18 accordingly.

From ii., iii., and iv. follows that operations of some SAF units abroad are affected, e.g. SAF display teams or SAF pilot school.

For further reading, the following documents are recommended:

EUROCONTROL Guidelines on 8.33 kHz Channel Spacing for Military Operators:

https://www.eurocontrol.int/sites/default/files/content/documents/single-sky/guidelines/EUROCONTROL-GUID-174%20MIL%208.33%20Ed%202.0_web.pdf

Commission Implementing Regulation (EU) No 1079/2012, Art. 4, 6, and 9:

<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:320:0014:0024:EN:PDF>

Validity

This Document is of informative nature and valid until further notice.