



Technical information for Ground Stations

Conversion from 25 kHz to 8.33 kHz channel spacing

Introduction

There have been two EU Commission Implementing Regulations dealing with the transition to 8.33 kHz channel spacing for VHF aeronautical communications in the EU. In 2007 (EC) No 1265/2007 required the move to 8.33 kHz VHF channels for air traffic operations above FL 195 in the ICAO EUR region. In 2012 (IR) (EU) No 1079/2012 requires the move to 8.33 kHz VHF channels below FL 195 and encompasses all uses of VHF aeronautical frequencies below FL 195.

Some specific uses of the aeronautical VHF band are out of scope of the IR and will remain on 25kHz channels. This includes allocations for use in an emergency such as 121.5 and 123.1 MHz, allocations associated with data link services and allocations that operate on a offset carrier basis.

Some limited exemptions for ground and aircraft equipage will also apply. These exemptions are not significant and will be for a limited duration only. Any exemptions that are granted will not delay the change in UK legislation. Further details of any exemptions granted by the European Commission will be published on the CAA website. In line with existing advice, ground station and aircraft owners are encouraged to upgrade early.

Aircraft Radios

Aircraft operating in airspace where carriage of a radio is mandatory are expected to have 8.33 kHz 'capable' radios by 31 December 2017. 'Capable' means that the aircraft radios will be able to tune to both 8.33 and 25 kHz channels with the related channel selection, transmitter modulation and receiver IF capabilities.

In some cases the aircraft radio(s) will be manually switchable between 25 kHz and 8.33 kHz modes while some radios will automatically switch between modes depending on channel selection.

Additional guidance for aircraft owners is available on the CAA's website:

<https://www.caa.co.uk/General-aviation/Aircraft-ownership-and-maintenance/8-33-kHz-capable-radios>

Ground Radios

All types of ground radio (fixed, mobile and handheld) at most Aeronautical Radio Stations including ATS, AGCS, OPC, (Offshore or Recreational Users) will need to be ready to operate on 8.33 kHz channels in 2018.

For ATC and FISO airfields operated by Air Navigation Service Providers, safety assurance and interoperability compliance will need to be in place prior to the upgrade, and all ground station operators will be expected to demonstrate that relevant safety considerations have been made before conversion. Ground stations are encouraged to discuss the matter with their airfield inspector if they have any concerns.

It is important that provisions to change over to 8.33 are considered now and not deferred until the Implementing Rule deadlines, when it may be too late and jeopardise the continued provision of your service. Appendix A sets out the key milestones of the implementing rule.

Channel Number

One aspect of 8.33 kHz operation that could cause confusion is that the radio or voice switch display for the operator (aircraft, ATC, FIS or AGCS) shows the channel not the frequency, although it is presented in a frequency like manner.

For example 131.425 MHz will be displayed as 131.430 as an 8.33 kHz channel on a radio front panel or voice switch display. Similarly 131.450 MHz will be displayed as 131.455 as an 8.33 kHz channel. The 8.33 kHz channel is what will be spoken by the ground radio user and the pilot, and in some cases more numbers will need to be spoken as, for example, 131.4 MHz becomes 131.405, although the actual frequency of transmission remains the same but with a smaller frequency stability and bandwidth.

Any service provider procedures will need to be modified accordingly. The simple message is for the pilot and the ground radio user to just use the numbers presented and not be concerned about the frequency.

The changeover to 8.33 kHz channels in most cases will use the existing licensed (25 kHz) centre frequency, although this will now be displayed and spoken as an 8.33 kHz channel, as explained above, as a slightly modified number. Licence holders should be aware of the changes needed to their documentation, approvals and certificates and ensure that these changes are in-hand.

The licensing fee charged by Ofcom for an 8.33 kHz radio licence will be significantly less than the 25 kHz licence fee, due to the reduced bandwidth occupied.

A 100 kHz range example of 8.33 kHz frequencies and related channel displays is shown in table 1.

Table 1 - 8.33 kHz Frequency and Channel Display Table

Operating Frequency (MHz)	Channel Spacing	Displayed and Transmitted
118.0000	8.33	118.005
118.0083	8.33	118.010
118.0167	8.33	118.015
118.0250	8.33	118.030
118.0333	8.33	118.035
118.0417	8.33	118.040
118.0500	8.33	118.055

Operating Frequency (MHz)	Channel Spacing	Displayed and Transmitted
118.0583	8.33	118.060
118.0667	8.33	118.065
118.0750	8.33	118.080
118.0833	8.33	118.085
118.0917	8.33	118.090
118.1000	8.33	118.105

2018 first phase 8.33 kHz assignments <FL195. Future assignments are expected to be on new 8.33 kHz frequencies.

Although the 8.33 kHz assignment may have an identical operating frequency to the previous 25 kHz assignment, all 6 of the digits shown in the 'Displayed and Spoken' column must be selected to ensure that the radio is operating in the 8.33 kHz channel spacing mode.

Selecting xxx.x00/.x25/.x50/.x75 will put the radio into '25 kHz mode'. Some radios have an 8.33/25 kHz switch so that only the relevant mode frequencies will be selectable/displayed. The table and diagram below illustrates the differences between referencing the same frequency in 25 kHz and 8.33 kHz channel modes.

Table 2 - 8.33 kHz/25 kHz Frequency and Display Table

Operating Frequency (MHz)	Channel Spacing & Op B/W (kHz)	Displayed	Spoken
118.0250	25	118.025	One One Eight decimal zero two five
118.0250	8.33	118.030	One One Eight decimal zero three zero

Diagram 1 - 8.33 KHz/25KHz Frequency and Channels

8.33 kHz VCS Channel Number	118.015	118.030	118.035
Operational Frequency (MHz)	118.0167	118.0250	118.0333
25 kHz VCS Frequency (MHz)	118.025		

8.33 kHz channel

25 kHz channel

Aeronautical Information including the AIP

NATS AIS (Aeronautical Information Service) have indicated that due to the number of changes AIP changes of this nature will not be updated as expected under the usual process.

To avoid confusion the CAA will maintain an AIP supplement (initially released on the 15th February 2018 and updated monthly) that lists completed and proposed conversions (looking forward 60 days).

In addition a CSV (Comma Separated Value) file will be hosted on the CAA's website and will be updated weekly. This data and supplement text will be updated automatically by the CAA at the appropriate point during the conversion process, this process will be triggered when we are informed that a ground station wishes to convert.