

8.33 kHz EXPLAINED

Not sure what the transition to 8.33kHz will mean for you?

Q, alias John Brady, explains all...



Funkwerk ATR833 radio with 8.33 channel selection

Q : Ah Bond, do sit down, don't touch anything... and do pay attention. You will see that your new gyrocopter, Nellie 11, has an 8.33kHz radio fitted.

Bond: Yes I picked up something about that from Mimi Labonq when I was in the Café René recently. Why has Eurocontrol changed to 8.33kHz channel spacing?

Q: Well Bond, Europe is running out of VHF frequencies because of the demand from commercial operations. The areas where a frequency is used have to be separated to avoid interference. For example the radio horizon between two airliners flying at 36,000ft is about 860km so a single upper route sector frequency can consume an area stretching from Calais to Nice and from Brest to the Rhine. The French are always difficult. At lower levels, frequencies can be re-used closer together but there are lots of them. Frequency re-use is not really an issue for light aircraft and small airfields but it is they that have to bear the main cost of introducing 8.33kHz channel spacing – that was recognised by Eurocontrol in their consultation but it went ahead anyway and is now the law. This is clearly a problem built in mainland Europe but we have to comply... even you, Bond (smirks).

Bond: So Q, how does this 8.33kHz radio work then?

Q: Well, with your old 25kHz radio, life was very simple, Bond. You dialled a frequency and that is what you got. All the frequencies were 25kHz apart and the bandwidth of the receiver was set so you could hear transmissions in the 25kHz of the spectrum you selected. Your 8.33 radio is much more cunning however, so pay attention Bond while I explain how this new gadget works.

The new radio will operate on 25kHz or 8.33kHz depending on what you select. If you select one of the current frequencies, such as 132.000 it will operate just like the old radio, but

Old 25 kHz Radio WIZIWIG	New 8.33 kHz Radio				
	What you select on the dial			What the radio gives you	
	The number you see	25kHz Frequency	8.33 kHz Channel	Frequency	Functionality
132.000	132.000	132.000		132.0000	25
	132.005		132.005	132.0000	8.33
	132.010		132.010	132.0083	8.33
	132.015		132.015	132.0166	8.33
132.025	132.025	132.025		132.0250	25
	132.030		132.030	132.0250	8.33
	132.035		132.035	132.0333	8.33
	132.040		132.040	132.0416	8.33
132.050	132.050	132.050		132.0500	25

if you select a new one such as 132.005 it will give you 8.33 functionality. Some radios have a switch to enable them to operate in 25kHz only mode to save you having to dial through all the 8.33 channels to get to the one you want – useful if you are working with our American cousins as the USA does not use 8.33 – but you need to make sure you have turned that switch back to 8.33 before the system here in Europe changes. Some frequencies will remain designated as 25kHz (such as 121.5, data link and those that use multiple transmitters including FIS and upper sector frequencies) but most will change to 8.33. Which is which the network manager will decide. So let's see how that will work in practice.

If ATC sends you to 132.000, as I mentioned earlier it will be because that is a 25kHz frequency and your radio will function just like the old radio. However, if they send you to 132.005 it will be because it is an 8.33 channel and when you select that your radio will stay on frequency 132.000 but operate in 8.33 mode. If you select 132.010 the radio will change to frequency 132.083, again in 8.33 mode. So Bond, the first lesson is that the number you dial up on your new radio is not necessarily the same as the frequency it uses!

Bond: Rather like a woman who says one thing and means another then!

Q. Now, now Bond, we're a non-sexist strictly PC organisation here. Anybody can mean the complete opposite of what they say; you're a Lib-Dem aren't you? Just pay attention!

Take a look at the table and you can see that for every 25kHz of spectrum you can have one 25kHz frequency or three 8.33kHz channels but not both. The 'channels' you select (.005 .010 .015 etc) are named like that for ease of reference but the corresponding frequencies the radio uses are really 8.33 kHz apart (.000 .0083 .0166, etc). Note that you cannot select 132.020 etc because it does not exist!

The second lesson is that though an 'old' 25kHz of spectrum such as 132.00 can be used for one 25 or for three 8.33kHz channels in this new arrangement, it cannot do both in the same area.

Are you still paying attention there, Bond? I need to tell you what can go wrong and I will be asking questions at the end. You have no need to concern yourself with whether a frequency is 25 or 8.33kHz because when you go to a published or allocated frequency your new radio will sort it out for you. If you accidentally select 132.005 when you should have selected 132.0 you will be on the right frequency but with a narrower bandwidth, but the chances are that you will be able to communicate. But if you select 132.0 when you should be on 132.005 your radio will be in 25kHz mode and you are likely to cause interference on several 8.33 channels and you may hear transmissions from adjacent frequencies. So Bond, you will need to take care with this gadget.

Bond: What about all my chums in the LAA, will they still be able to use their existing 25kHz sets?

Q: I'm afraid not, dear boy. You won't be able to use an old 25kHz radio once the frequencies are reallocated and the dates for change in different areas are passed. The only exception is for radios that can physically only transmit on assigned 25kHz frequencies and about the only equipment that satisfies that for us would be an ELT or PLB on 121.5. The dates are:

FROM 17 NOV 2013

- Manufacturers may not market radios unless they are 8.33 capable.
- No aircraft may receive an initial CofA or Permit unless any radios fitted are 8.33 capable.
- Any upgrade to aircraft radios must include an 8.33 capability.

FROM 1 JAN 2014

- No aircraft may fly IFR in class A, B or C airspace unless it is 8.33 capable.
- No aircraft may fly VFR in class A, B or C

airspace that is operating 8.33 channel spacing unless it is 8.33 capable.

FROM 31 DEC 2017

- All aircraft radios operated in the EU must be 8.33 capable.

So there you are Bond, take care of this new gadget because it is expensive – and do try not to get into trouble again, otherwise you could become an austerity measure and we will have to consider replacing you with one of these new Greek Bonds, which I understand are very cheap just now. *With apologies to Ian Fleming* ■

AR6201 VHF Transceiver, 8.33 kHz

- integrated VOX controlled intercom
- 10-33 V power supply
- 6-10 W XMIT power
- dual watch

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