

CS STAN / MCA

ETSO v.s. TSO

VHF



«Teknisk Samling»

Februar 2016.

«Dobbel Ole»

- **Certification Specifications for Standard Changes and Standard Repairs**
- **Minor Change Approval**
- **To løsninger for å innmotere «Ikke sertifisert» utstyr i ELA 2 fly (inntil 2000 kg MTOW)**
Litt forskjellige regler for Motorisert v.s. Seilfly

CS STAN & MCA



Regulatory requirements for installing FLARM in aircraft

Published 27 November 2015

When installing any type of equipment in a type-certificated aircraft, there are mainly two types of legal requirements: First, the equipment has to be approved, and second, the installation itself has to be approved. These two requirements are distinct and commonly mixed up even by aviation professionals. This white paper explains those two requirements and how they relate to the installation of FLARM.

I hovedsak kan vi si at produsenten har gjort papirjobben for deg når du velger MCA. Har en pris - Opsjon

MCA

A screenshot of the FLARM website's product page for EASA Minor Change Approval (MCA). The page features the FLARM logo at the top left, followed by navigation links: PRODUCTS, SOLUTIONS, and TECHNOLOGY. Below these is a breadcrumb trail: HOME - SHOP - EASA MINOR CHANGE APPROVAL (MCA). The main content area displays the EASA logo (European Aviation Safety Agency) on a blue background. Below the logo, the text "EASA MINOR CHANGE APPROVAL (MCA)" is shown, followed by the price range "€ 99.00-€ 249.00".

FLARM PRODUCTS SOLUTIONS TECHNOLOGY

HOME - SHOP - EASA MINOR CHANGE APPROVAL (MCA)

EASA
European Aviation Safety Agency

EASA MINOR CHANGE APPROVAL (MCA)

€ 99.00-€ 249.00

- Hva fikk vi i 2009?
- **Which equipment is now considered as standard parts?**

Examples of equipment which can be considered as standard parts are electrical variometers, bank/slip indicators ball type, total energy probes, capacity bottles (for variometers), final glide calculators, navigation computers, data logger / barograph /turnpoint camera, bug-wipers and anti-collision systems (FLARM).

- **Is it allowed to install any equipment, either standard parts or approved parts, in a sailplane without further approval?**
- **The answer is NO**

Standard Parts

Annex IV to ED Decision 2015/016/R:

- **CS STAN.20 Operational limitations or restrictions**

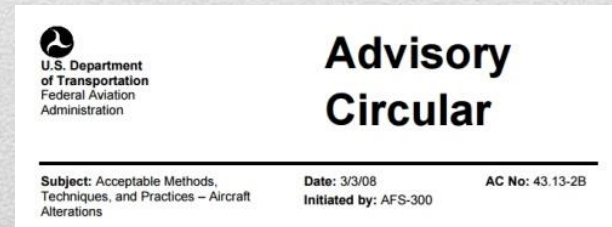
SCs/SRs, as described in these Certification Specifications, may contain operational limitations or restrictions with regard to the use of an aircraft instrument/equipment.

- **CS STAN.30 Changes/Repairs that are not in conflict with TC holders' data.**

Each SCs/SRs has an applicability independent of the aircraft type and can be embodied in/on an aircraft type unless specific instructions for such a change or repair are issued by the TC holder. In case that specific data issued by the TC holder exist, the TC holder data takes precedence over a SC/SR. If the change or repair would conflict with the TC holder data, CS-STAN should not be followed and the change/repair should be approved following Part-21 Subparts D or M.

- **CS STAN.40 Referenced documents**

The acceptable methods, techniques and practices contained in these Certification Specifications may refer to other documents. (> *eks: FAA 43.13 2B*)



CS STAN regler fra 2015

- **CS STAN.50 Instructions for Continuing Airworthiness**
Due to the SC/SR being embodied, the aircraft instructions for continuing airworthiness may need to be updated. This update is considered to be part of this SC/SR, and, therefore, requires no specific approval.
- **CS STAN.60 Aircraft Flight Manual Supplement (AFMS)**
Due to the SC/SR being embodied, the AFM may need to be updated. This manual supplement is considered to be part of this SC/SR, and, therefore, requires no specific approval.
- **CS STAN.70 Acceptable Means of Compliance (AMC)**
MC for the release to service of the aircraft after embodiment of the SC/SR, the eligibility of the persons entitled to this release, the parts and appliances suitable for use in a SC/SR and their identification, the documents to be produced and kept with the change/repair, the required amendment to aircraft manuals, the EASA Form 123 (change/repair embodiment record), etc. are contained in AMC M.A.801 in Annex I to Decision No 2003/19/RM.

CS STAN regler fra 2015

- fortsatt

• Hvorfor?

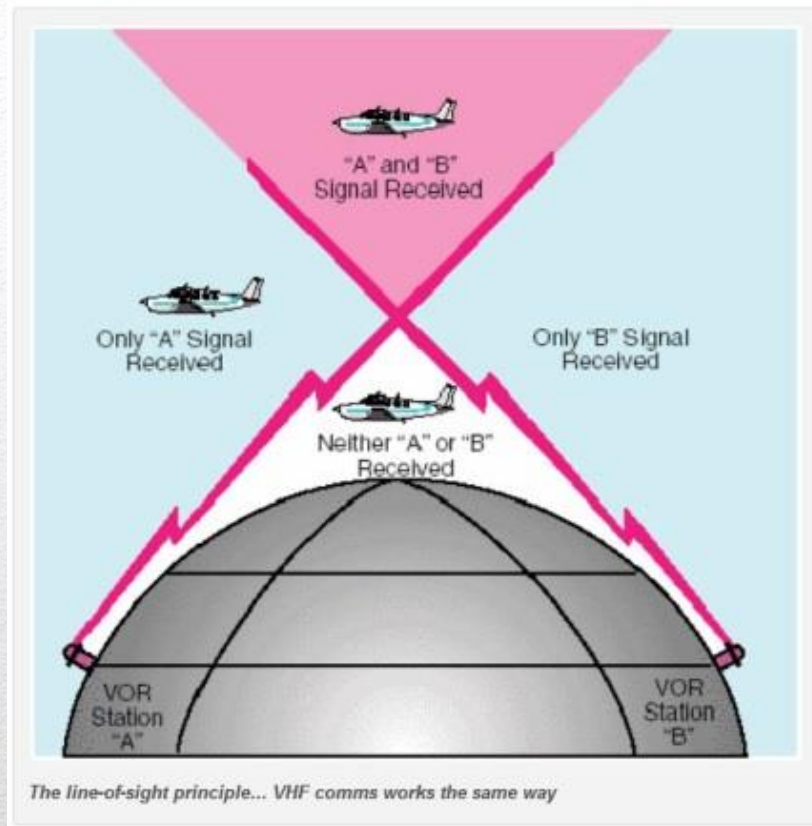
- Større flytettehet og mange sektorer = Behov for flere kanaler
- Felles Europeisk VHF system
- Vedtatt i EU:
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:320:0014:0024:EN:PDF>
- Britisk publisering:
<https://www.caa.co.uk/docs/33/InformationNotice%202014040.pdf>
- Vedtatt i Norge: Forordningen ble tatt inn i norsk rett 28. januar 2014. FOR 2014-01-28-71.
- NLF jobber for å få til avvik og/eller en utsettelse for VFR flyginger .

Nye VHF krav fra 2018

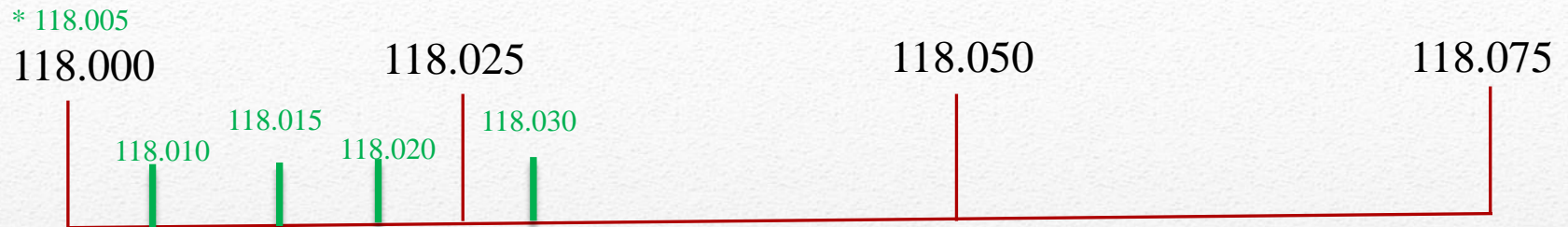
- Frekvensbåndet for aviation tildelt fra 118.000 til 132.000 MHZ
- 1947: Kanalseparasjon 200 Khz som ga 70 kanaler
- 1958: Kanalseparasjon 100 Khz som ga 140 kanaler
- 1959 frekvensbåndet utvidet opp til 136 Mhz som ga + 40 kanaler
- 1964: Kanalseparasjon 50 Khz som ga 360 kanaler
- 1972: Kanalseparasjon 25 Khz som ga 760 kanaler (+ 137.000 MHZ = 800)
- 1994: Forslag om 8.33 Khz
- 1999: 8.33 tatt i bruk over FL 245
- 2007: 8.33 tatt i bruk over FL 195
- 2012: Bestemt at 8.33 innføres fra ground per 1.1.2018
- Et digitalt USA alternativ «VDL Mode 3» **kunne** gitt 4 ganger økning men Europa hadde dårlig tid og gikk for analog 8.33

- Dagens 25 Khz system gir ergo maksimalt mulig 800 kanaler
- 8.33 Khz separasjon gir teoretisk 2400 analoge kanaler
- 25 Khz sender fra under FL 195 når FL 195 og støyer

Historien og frem til 2017



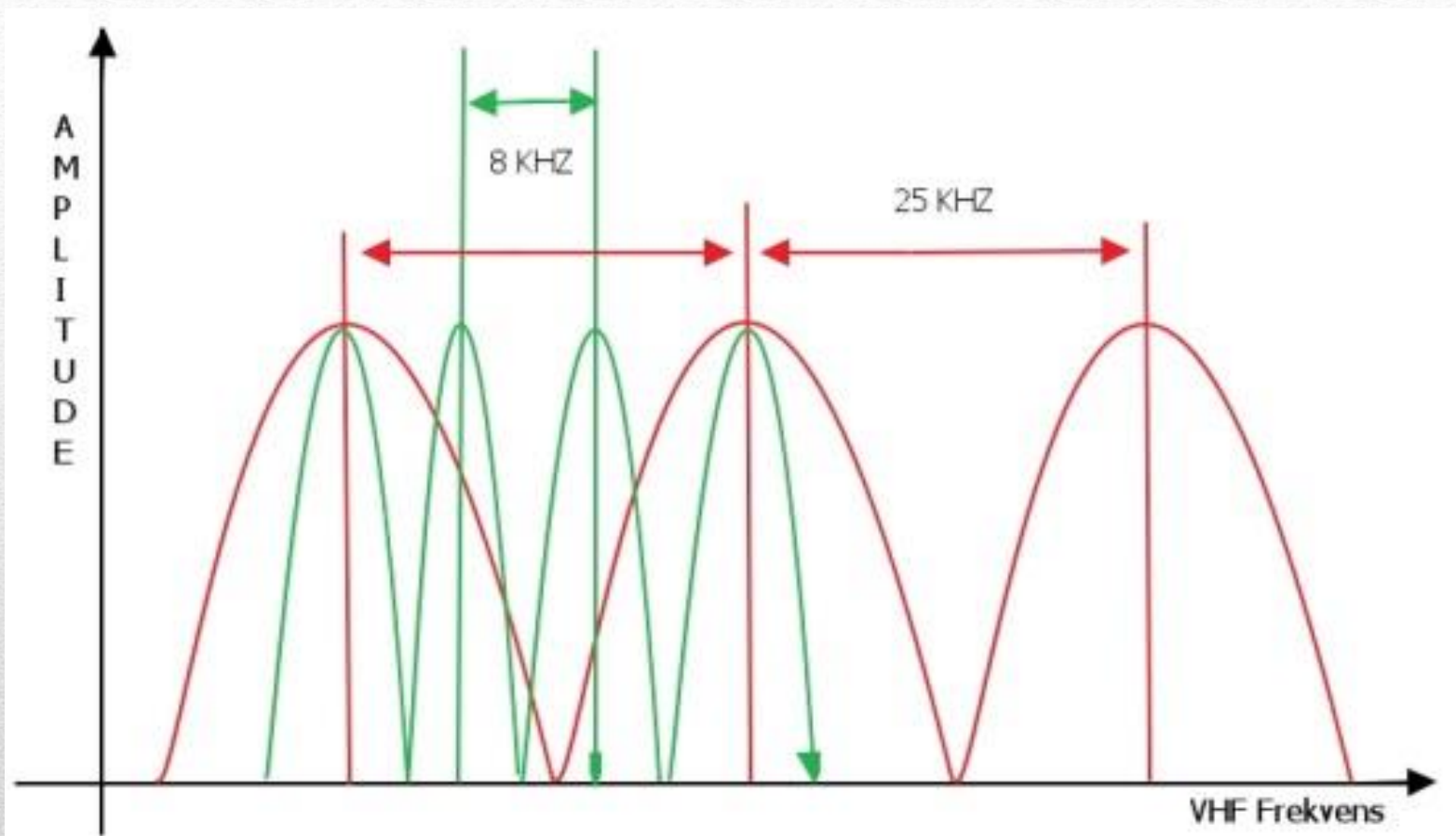
Problemet med delt bruk av 25 og 8.33 under/over FL 95/195



* Mer om de nye **grønn-markerte** 8.33 frekvensene kommer om litt ...

- Hvor mange kanaler går det per MHZ?
- Vi har båndet fra 118 til 137
- = Vi har 20 Mhz å ta av
- Det er 1000 Khz per Mhz
- Med 25 Khz får vi plass til 40 kanaler per Mhz
- Med **8.33 Khz** får vi plass til 120 kanaler per Mhz

Hva er kanalseparasjon?



Konflikt gammel vs ny VHF

Old 25 kHz Radio	New 8.33 kHz Radio				
WIZIWIG	What you select on the dial			What the radio gives you	
Frequency	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

Eksempel: Egen test av en Dittel 8.33 VHF

Radio: | Frekvensteller:

122.000 | 122.00000 *utgår i 2018

122.005 | 122.00000 * ny 8.33 kanal

122.015 | 122.00833 *

122.020 | 122.01667 *

122.025 | 122.02500 *

122.030 | 122.02500 *

8.33 = Nye frekvenser

The conversion requirements shall not apply to frequency assignments:

- that will remain in 25 kHz channel spacing on the following frequencies:
- the emergency frequency (121,5 MHz);
- the auxiliary frequency for search and rescue operations (123,1 MHz);
- the VHF digital link (VDL) frequencies (136,725 MHz, 136,775 MHz, 136,825 MHz, 136,875 MHz, 136,925 MHz and 136,975 MHz);
- the aircraft communications addressing and reporting system (ACARS) frequencies (131,525 MHz, 131,725 MHz and 131,825 MHz);
- where offset carrier operation within a 25 kHz channel spacing is utilised. Radios intended to operate exclusively in one or more frequency assignments that will remain in 25 kHz channel spacing shall not be required to have the 8,33 kHz channel spacing capability.

Unntak

- I Danmark har de innført generelt unntak under 3000 fot untatt i København Area / TMA/CTA
VFR “dag” får i tillegg mulighet for å benytte 25KHZ men fortsatt untatt i København Area / TMA/CTA
(Avviket må bifalles av Network Manager i Eurocontrol)
- .I Norge er det forslag om unntak opp til FL95 + alle tårn CTR / TIA / AFIS (NLF og AVIONOR)
- I såfall blir kun TMA og CTA blir 8.33 men...
- Først LT og deretter Eurocontrol må bifalle
- Svenskene gjør foreløpig nothing
- Prossessen er LT – ESA- Network Manager Eurokontrol
- og vi vet derfor ingenting før sommeren 2017

Unntak Part II

- Enkelt og greit betyr det i utgangspunktet at alle som har VHF som kun takler 25 KHZ må skifte apparat innen 2 år
- Gjelder alt: fly, bakkestasjoner og håndapparater
- Frekvenslister blir endret
- Men om NLF/Avionor får gehør kan fly som operer lokalt og i G-luftrom fortsatt å benytte 25KHZ
- **Når det gjelder bytte av apparat er utfordringen** for produsentene er at dette gjelder flere land og mange fly.
- **Smart** å være ute i god tid.



Krav om 8,33 KHZ kanalseparasjon i flyradiobåndet fra 1. januar 2018