

THE USE OF BAND III IN EUROPE

The pressure on spectrum in the UHF band, where DTT is mainly implemented, has given rise to the idea that Band III could be used to replace the frequencies that may no longer be available to DTT. Here we tell you why Band III cannot replace these frequencies and where and how your organization can contribute to the discussions. Please get involved.

BAND III CHARACTERISTICS

Band III covers the frequencies from 174 - 230 MHz. It is part of the VHF Band which ranges from 30 - 300 MHz. 56 MHz of Band III are divided into eight 7 MHz channels (from channel 5 to channel 12); each 7 MHz channel can also be sub-divided into four 1.7 MHz channels (from A to D), Figure 1. A few countries (e.g. Norway and Denmark) also planned for DAB channel 13, which is the 10 MHz from 230 - 240 MHz, which is divided into six 1.7 MHz blocks, 13A to 13F.

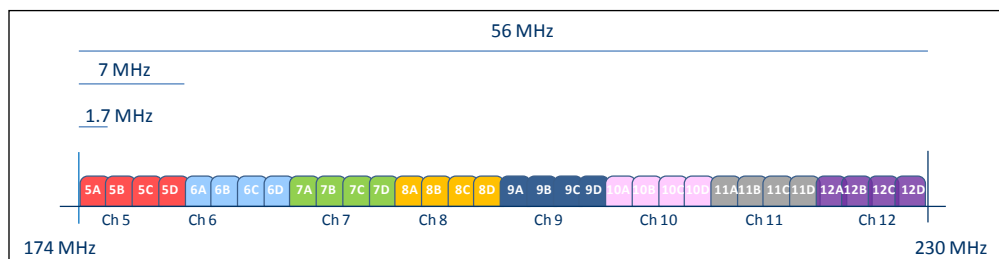


Figure 1: Band III frequency channels

HOW BAND III HAS BEEN PLANNED IN EUROPE

The use of Band III in Europe has been defined by the GE06 Agreement which planned Band III for DAB and DVB-T services. DVB-T signals use the full 7 MHz channels in Band III and DAB signals use 1.7 MHz channels.

On average, each country got in the plan three DAB multiplexes with national coverage and one DVB-T multiplex with national coverage. Additional frequencies were planned for local DAB or DVB-T services.

A few countries such as Finland and Italy planned most of Band III for DVB-T services.

DAB frequencies can also be used for DAB+/DMB and DVB-T frequencies can be used for DVB-T2.

HOW BAND III IS USED IN DIFFERENT COUNTRIES

The spectrum in Band III is already in use in most of European countries for digital audio broadcasting, digital television, radio microphones, and other non-broadcasting services.

The usage details of the spectrum vary from country to country depending on national circumstances (national needs, economy, topography, geographic situation, etc.). Table 1 in the Annex collects the current use of Band III in different European countries and their future plans of use¹:

- Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Spain, Sweden, UK use the DAB frequencies as planned. Although not included in the current table, also in the following countries (as per WorldDAB web site information): Czech Republic, Malta and Monaco.
- In Germany and Switzerland, also the DVB-T frequencies are used for DAB+.
- Finland, Italy and Sweden use the DVB-T frequencies as planned and the following countries are also considering the same: Denmark and Poland.
- In Austria the use of the band is foreseen for DAB+.
- In many countries digital broadcasting services share the spectrum with additional services: defence, PMSE (e.g. radio microphones), short range devices, private mobile radio, and aeronautical communication.

BAND III CANNOT COMPENSATE FOR A REDUCTION OF UHF SPECTRUM

- The spectrum in Band III is already in use in most of European countries for digital audio broadcasting, digital television, radio microphones and other non-broadcasting services.
- The amount of spectrum in Band III, 56 MHz, is small compared with the spectrum planned for DTT in the UHF band. 392 MHz were planned in GE06 and 224 MHz will be available to DTT after the release of the 800 MHz and 700 MHz bands (the 800 MHz is already released across EU countries and the 700 MHz will be by 2020/2022). Therefore, a substantial compensation of lost UHF-Spectrum is not viable.
- Many European countries do not transmit TV signals in Band III. Antennas have been optimised accordingly to work on the UHF band only. Starting television services in Band III would require re-adapting antennas to tune to Band III. This would have a significant financial impact and would be very disruptive for users. The additional effort is disproportional to the hypothetical achievable benefit.
- Some European countries (e.g. Austria, France, Germany, Netherlands, Switzerland) have revised their GE06 Band III DVB-T allotments / assignments to provide a better nationwide DAB planning and in coherence with international coordination, hence making them no longer usable for DTT.

WHAT CAN BE DONE?

The crucial message to regulators is that Band III cannot be a replacement for any DTT frequencies released from the UHF band. Broadcasters should get involved in their country's discussions on spectrum allocations and brief their national regulators. The EBU can provide additional briefing documents with up-to-date information ahead of their preparatory meetings.

WHO SHOULD YOU CONTACT FOR ASSISTANCE?

Before your next meeting with your national regulator, please contact:

Elena Puigrefagut (puigrefagut@ebu.ch), Walid Sami (sami@ebu.ch), Darko Ratkaj (ratkaj@ebu.ch) or Marcello Lombardo (lombardo@ebu.ch) to obtain the latest supporting documentation from the EBU.

HOW CAN YOU GET INVOLVED IN THE EBU'S WORK?

To follow our work on Spectrum, you can login to the EBU Technology & Innovation website and join the Spectrum group here: tech.ebu.ch/groups/sm.

All EBU members can join any of the strategic programmes or project groups dealing with spectrum and future media distribution related matters (Spectrum, S-SPT, FD, MTS).

¹ For updated information please see <http://www.worlddab.org/>

ANNEX: Table 1: Current use of Band III in different European countries and their future plans of use²

Country	DAB/DAB+ current use			DVB-T current use			PMSE	Other	Future plans
			Coverage			Coverage			
Austria	DAB+	1 DAB+ trial regional – Commercial.	29% pop outdoor.	-	No DVB use.	-	Yes	No	5 DAB+ layers foreseen by regulator. The DVB-T layer from GE06 converted to DAB. Digital radio will be launched officially in the first half of 2018.
Belgium/ Flanders	DAB/ DAB+	1 DAB layer covering Flanders – PSB. 1 DAB+ layer in Brussels area operated by Norkring – Commercial.	95% pop outdoor. 99% main roads.	-	No DVB use.	-	Yes (in ear systems) on Ch. 5 as well as mobile audio links from motorbikes to planes and helicopters.	No	There are plans to migrate to DAB+ only after expiration of contract with transmitter provider in 2019.
Belgium/ Wallonia	DAB	1 DAB layer covering Wallonia – PSB.	95% pop outdoor. 99% main roads.	-	No DVB use.	-	Yes	No	3 DAB+ layers (local or regional) (with the conversion of the DVB-T GE06 layer).
Denmark	DAB+	2 DAB+ nationwide layers – PSB & Commercial. 1 DAB+ layer local – Commercial.	98% pop outdoor.	-	No DVB use.	-	Yes	ALD (Assistive Listening Devices).	Decision to switch off FM to be taken when 50% of listening is digital (currently at 36%). DAB+ coverage in the PSB MUX should be increased to FM-like coverage by ultimo 2019.
Finland	-	No DAB use.	-	DVB-T2	3 national layers.	(< 100% coverage).	Radio microphones 174 - 230 MHz.	No	DVB-T2 expected to continue, no plans for DAB.
France	DAB+	Metropolitan coverage. Three cities (Marseille, Nice and Paris) started in June 2014 with a total of 14 muxes but without the PSBs and main CBs.	19% pop outdoor.	-	No DVB use.	-	Yes	Military service for blocs 12B to 12D.	CSA consultation results: - Currently under call for applications: Lyon, Lille, Nantes, Rouen, Douai-Lens, Strasbourg, Béthune, Valenciennes, Mulhouse, Dunkerque, Le Havre et Saint-Nazaire, for a total of 30 muxes. - New calls for applications for the 2018-2020 period under preparation. First aim is to provide DAB+ coverage to the denser nodes of the territory and main highways and roads: 15 areas of more than 175k inhabitants each will be opened for application in July 2018, 15 more in July 2019. - Less dense areas will be covered after 2020. - National coverage (2 muxes) might be opened for application late 2018. - It is expected to have more than 20% coverage reached by the end of 2018, imposing by law DAB+ in the receivers. - For the time being, FM radio and DAB+ seen as complementary.
Germany	DAB+	1 nationwide layer - PSB & Commercial. 2 regional layers per region – one Commercial and another PSB and Commercial.	96% pop outdoor.	-	No DVB use (layers from GE06 converted to T-DAB).	-	Yes (for non-professional applications).	No	1 DAB+ nationwide layer licensed – Commercial; implementation will start in 2018. 1 DAB+ layer for coverage in congested urban areas. 1 DAB+ regional layer.

² For updated information please see <http://www.worlddab.org>

Country	DAB/DAB+ current use		DVB-T current use		PMSE	Other	Future plans		
		Coverage		Coverage					
Greece	DAB+	1 trial in Athens by public service broadcaster ERT.		-	No DVB use foreseen.	-		DAB+ frequency plan, as well as the auction for network provider licenses, were officially announced in January 2018. The auction for the DAB+ network providers (nationwide and regional) scheduled for April 2018 and whose terms required full network deployment within 2 years after being granted the license, failed. Two bids were submitted and both were disqualified before reaching the actual auction process. It is not yet known how and when the auction will be attempted again.	
Ireland	DAB	1 DAB nationwide layer – PSB. 2 local DAB/DAB+ network trials.	52% pop outdoor.	-	No DVB use. 1 layer planned in GE06.	-	Yes	Short Range Devices (SRD), Aeronautical Comms.	
Italy	DAB+	1 DAB+ nationwide layer – PSB. 2 DAB+ nationwide layers – Commercial. Some local commercial and PSB layers are operating in a number of regions.	65% pop Outdoor (>40% for PSB, to be extended by the end of 2018).	DVB-T	- 1 national layer (PSB) with regional contents (mostly Ch. 5 and Ch. 9). - 1 Ch. reserved for a DVB-T2 layer (Ch. 8) - Channels 6, 7, 10 and 11 are reserved to local broadcasters in some regions as coordinated at the GE06 Agreement and also used by PSB to complete the coverage of its regional layer.	>99% coverage for the PSB layer (obtained also with UHF frequencies).	Yes	Ch. 3 is allocated to military services.	As from 31/05/2018, AGCOM, the Italian Regulatory Authority, is going to adopt the new frequency plan for DTT and DAB+. VHF frequencies, as coordinated according the GE06 Agreement, are going to be planned for a national DTT layer with regional contents (PSB and commercial) as well as to maximize the available frequencies to be planned for the DAB+ in the near future.
Netherlands	DAB+	2 DAB+ nationwide layers – one PSB and one Commercial. 1 DAB+ regional layer (5 regions) – PSB and Commercial.	95% pop outdoor.	-	No DVB use.	-	Yes	SRD, land mobile.	The DVB-T layer from GE06 converted to DAB, final policy is being developed for the 3 remaining layers.
Norway	DAB+	1 DAB+ regional layer (7 regions) – PSB. 1 DAB+ nationwide layer – Commercial. 1 DAB+ local layer (37 regions) – Commercial. 1 DAB+ nationwide layer – Commercial.	99.8% pop Outdoor - PSB 93.0% pop. Outdoor – Commercial.	-	No DVB use.	-	No	No	1 nationwide layer reserved for DTT.
Poland	DAB+	1 DAB+ regional layer (17 regions) – PSB.	56% pop outdoor.	DVB-T	Mux-8 in operation with 4 commercial TV programmes. It uses Ch5 to 12	-			The 2 DAB regional layers are planned to have nationwide coverage in 2020.
Russia	-	No DAB use.		DVB-T2	DVB-T2 limited use: a few RF		Under consideration.	-	DVB-T2. Under consideration: DVB-T2 Lite, DAB+.

Country	DAB/DAB+ current use			DVB-T current use			PMSE	Other	Future plans
			Coverage			Coverage			
					channels over some territories.				
Slovakia	DAB+	6 regional DAB+ trials (MFN) – PSB and Commercial for the period 2017-2020.	30% pop outdoor.	-	DVB-T2/4k pilot during Rio 2016 Olympic Games	Capital city.	Radio microphones 174 - 230 MHz.	-	2 DAB+ national layers + regional coverage planned.
Slovenia	DAB+	1 DAB+ nationwide layer - PSB & Commercial.	67% portable indoor. 89 % main roads.	-	No DVB use.	-	Yes		More DAB+ layers.
Spain	DAB	3 nationwide layers (1SFN + 2 MFN) but currently only covering Madrid and Barcelona – PSB and Commercial.	20% pop outdoor.	-	No DVB use.	-	Yes	No	DAB regional layer, with 1/3 SFN multiplex (nowadays without transmissions) and 2/3 MFN multiplex (not expected to be implemented). DAB local layer, with 237 areas covered by different frequency blocks in Band III and L Band (not expected to be implemented). Allowed DVB future use in Band III. No firm plans yet to migrate to DAB+, although this should have been done in accordance with the law.
Sweden	DAB/ DAB+	1 DAB nationwide layer – PSB. 1 DAB+ regional layer – PSB and Commercial.	35% pop outdoor.	DVB-T2	1 national layer	coverage completed with UHF frequencies.		Ch 13 allocated to DAB in W/revCO.	In June 2015, the FM to DAB+ switchover plan was frozen. The launch of commercial radio has been pushed forward several times since. Situation is to be reviewed depending on DAB development in Europe.
Switzerland	DAB+	3 layers in French speaking, Italian speaking and Eastern part. 5 layers in German speaking part (one PSB, three commercials two of them regional, one urban small scale).	998% pop Outdoor. 98% pop indoor.	-	No DVB use (layers from GE06 converted to T-DAB).	-	Yes, license exempt radio microphones.		Digital listening reached 57% in 2017. FM switchover planned in 2020 - 2024.
UK	DAB/ DAB+	3 national networks. 1 local layer. Preparation for small scale (?) layer.	pop Indoor: 97% for National PSB 91 % for commercial Digital One and 77% for commercial Sound digital. 90% for local layer indoor.	-	No DVB use (no DVB-T layer planned in GE06).	-	Yes, interleaved within land mobile.	Land mobile has exclusive access to 12 MHz out of 56 MHz available.	No official migration plans to DAB+ but the use of DAB+ is increasing. Digital radio listening reached 50%, which may trigger a review of when to switch over. Any decision will be made by the government.