

MBT ASSOCIATION CONFERENCE



**AGENCY FOR
ELECTRONIC
COMMUNICATIONS**

RF spectrum management within regulatory trends

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Section I

Regulatory trends in Broadcasting Spectrum



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Spectrum management and NFAT

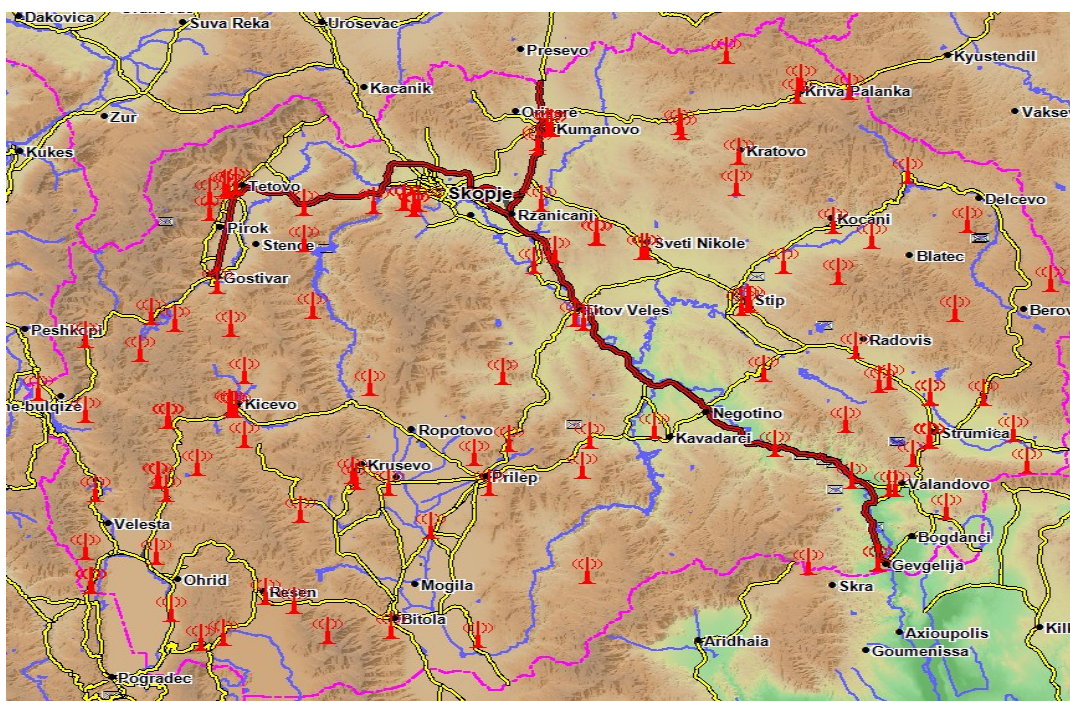
- Agency for electronic communications (AEC) – Macedonian Regulatory body responsible for spectrum management
 - Plan for the allocation of radio frequency bands in the Republic of North Macedonia (NFAT - National Frequency Allocation Table)
 - Plan for the assignment and use of radio frequencies in the Republic of North Macedonia
- When adopting the NFAT and the Plan for the Assignment and Use of Radio Frequencies, the Agency coordinates the activities with the regulatory body responsible for matters in the field of broadcasting in relation to the part of the plan relating to radio frequencies used in broadcasting

Bands allocated for broadcasting

- 148.5 – 283.5 kHz LF – sound broadcasting
- 526.5 – 1606.5 kHz MF – sound broadcasting
- 5950 – 26100 kHz HF – sound broadcasting
- **87.5 – 108.0 MHz FM – sound broadcasting**
- 47 – 68 MHz TV Band I – analog TV (terrestrial)
- **174 – 230 MHz TV Band III – DVB–T digital TV (terrestrial) & T–DAB digital sound broadcasting**
- **470 - 694 MHz TV Band IV/V – DVB–T digital TV (terrestrial)**
- 1452–1479.5 MHz L-Band – T-DAB digital sound broadcasting

FM (87.5-108 MHz)

- 271 frequency authorizations (3 national networks of PE National Broadcasting, 3 private national networks, 13 regional and 38 local)
- Request for 4th national network of PE National Broadcasting
 - Regulatory trend (status quo – no switch off in near future)



UHF (470-694 MHz)

- Current usage of UHF (7 DVB-T MUX)

Allotment zone	A1, pay TV			PE Macedonian Broadcasting		A1, free to air	
	MUX 1	MUX 2	MUX 3	MUX 4	MUX 5	MUX 6	MUX 7
D1 Crn vrv/Skopje	26	28	30	23	45	33	48
D1 Crn vrv/Veles						40	47
D2 Stracin	21	32	46	24	42	37	41
D3 Turtel	22	32	38	24	39	43	44
D4 Boskija	21	37	38	34	39	41	44
D5 Pelister	25	29	33	22	37	38	42
D6 Mali Vlaj	32	39	31	26	36	44	41
D7 Stogovo	47	37	31	28	43	35	21
D8 Popova Sapka	24	34	38	27	36	41	22

➤ Regulatory trend (Ongoing international activities for review)

UHF Review

WRC-23 established a new regulatory framework enabling flexible use of the 470-694 MHz frequency band for additional mobile applications on a secondary basis.

- some countries plan to maintain DTT usage in this band
- others are interested in introducing flexible use of this band for additional applications under mobile service on a secondary basis (military or PPDR, and IMT)

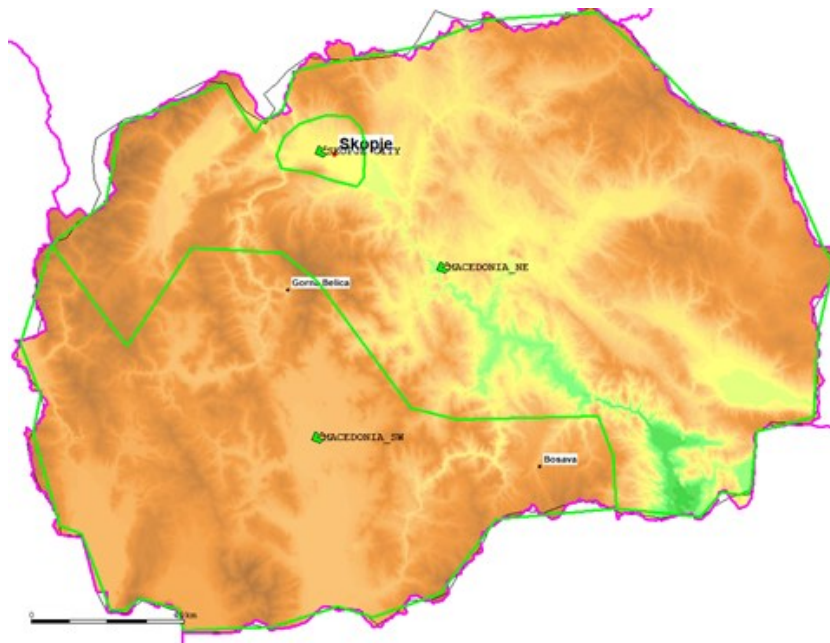
Macedonia is a co-signatory to the Resolution related to the future review of the UHF band (470–694 MHz)-AI 2.14.

Macedonia supports further studies and discussions on the future use of the band for broadcasting and mobile services (CEPT WGFM FM51 WI and RSPG opinion in 2028)

- **WRC-27 & WRC-31: Digital Dividend 3 (614-694 MHz) ?**

VHF (174-230 MHz)

- Current situation – No frequency authorizations
- Only frequency plan: 1 DVB-T and 2 T-DAB national MUX
 - Regulatory trend (DVB-T and T-DAB)



- Ongoing spectrum replanning and international coordination

Section II

Broadcasting Spectrum Replanning and International Coordination

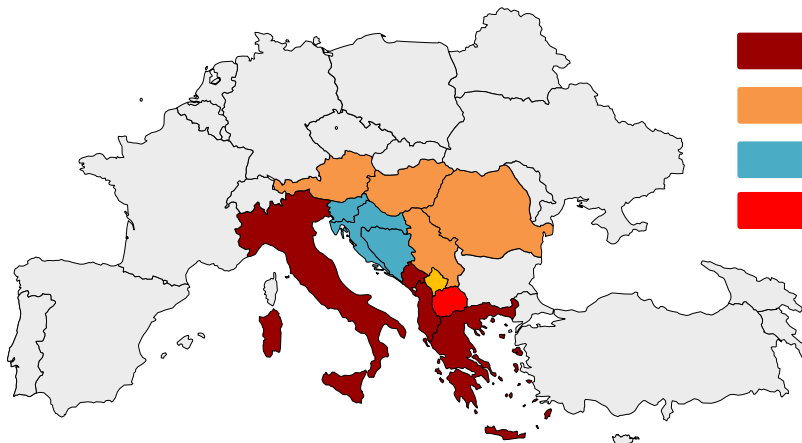
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Regional Groups for Rearrangement of the GE06 Plan in the VHF Band

- Adriatic-Ionian Group (Albania, Bosnia and Herzegovina, Croatia, Greece, Montenegro, Italy and Slovenia),
- Group of Administrations (Austria, Bosnia and Herzegovina, Croatia, Hungary, Romania, Serbia, Slovenia),
- Macedonia joined these regional processes at a later stage.



- Countries from Adriatic-Ionian Group
- Countries from Group of Administrations
- Countries belonging to both Groups
- Countries that join these groups at a later stage

Strategic Importance of Radio Frequency Replanning for Macedonia

1. Domino effect of radiofrequency re-planning;
2. Continuation of the work of the regional groups;
3. Equitable access to spectrum resources;
4. International recognition in International Telecommunication Union Plans



European
Commission

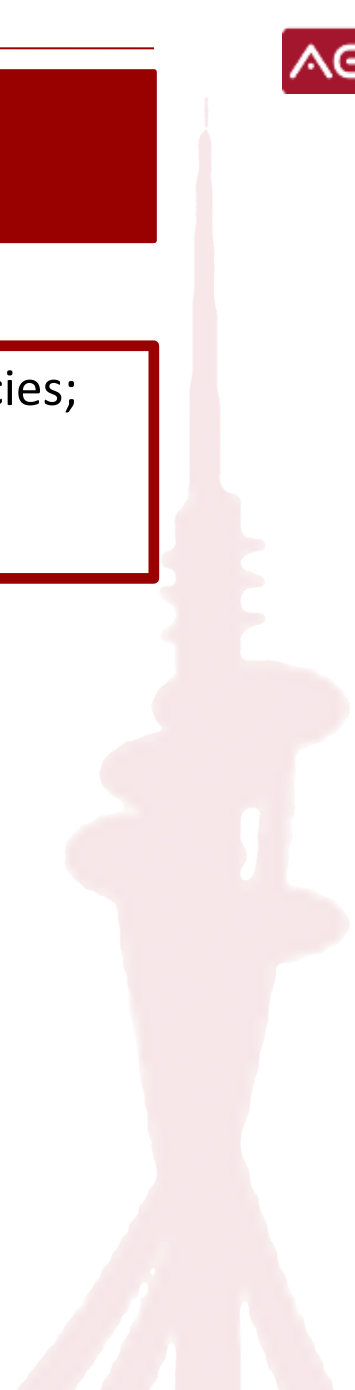
VHF Channel Plan: Proposed and Coordinated Channels

ALLOTMENT ZONE	DVB-T	NEW T-DAB CHANNEL BLOCKS FOR NATIONAL MUX	GE06 T-DAB CHANNEL BLOCKS	GE06 T-DAB CHANNEL BLOCKS	ADDITIONAL T-DAB CHANNEL BLOCKS
CRN VRV	9	10A	12C	11C	6C, 6D
STRACIN	9	10A	12C	11C	5C, 5D
TURTEL	8	7A	12C	11C	12B
BOSKIJA	8	6A	12C	11C	6B
PELISTER	9	10D	12A	11A	10C
MALI VLAJ	5	10D	12A	11A	10C
STOGOVO	7	10D	12A	11A	10B
POPOVA SAPKA	9	10A	12C	11C	10B
CITY OF SKOPJE	6	10A	12A	11A, 11C	5A, 5B,10C

- AEC allocated frequency resources;
- Spectrum needed for future implementation is available.

International FM and UHF Activities of Macedonia

1. FM-intensive coordination activities for FM radio frequencies;
2. UHF band- no modifications are foreseen. Changes will be made only if they become technically necessary.



From Planning to Implementation

1. Frequency Studies;
2. Technical Analysis;
3. International Coordination;
4. ITU Recognition;
5. Service Implementation- DVB-T | T-DAB | 5G | 6G....

Every new technology requires years of planning, coordination and engineering work.



Conclusion

1. Effective frequency planning and coordination remain very important. International cooperation helps ensure fair access to spectrum resources.
2. The Agency for Electronic Communications continues to support the development of digital broadcasting and digital radio services.



Thank You

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