

DKE-AK 731.0.8: "Professional Wireless Microphone Systems"

"The looming conflict scenario"

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Preliminary remarks

- This "worst case" scenario summarizes on-going and emerging developments in the future use of UHF frequencies.
- The assessment of the consequences results in the obligation to cooperate in concept work on the experts level.
- As frequency planning processes take considerably longer than event and product planning, it is important to set the points correctly now at this point in time in order to avoid any negative consequences.

Phase 1

■ Digitization of "analogue" TV stations

➤ Already completed or being implemented

- The local field strength of the TV stations increases from 70 to 80 dB μ V/m.

Background: changeover from "roof aerial reception" to "direct living room reception with mini aerials".

➤ Consequence:

- Microphone frequencies have to be changed in some regions
- Many microphones are impaired in range and quality
- Incipient loss in practical use motivates investment for example in replacing existing microphone systems with microphones that have enhanced large-signal properties.

Phase 2

- **Introduction of DVB-H**
- Introduction has started, expansion will be noticeable at the latest by 2008
 - Local field strength of mobile-phone TV compared to digital TV increases from 80 to 105 dB μ V/m (level increases by factor of 12)
- Consequence:
 - Considerable loss in range and quality for microphones and IEM
 - Considerable compulsion to invest in high-end technology
 - Yet another inevitable change in frequency for microphone systems
- IFA 2007: "New standard DVB-SH"
 - Local repeaters in urban areas receive programmes directly from the satellite and distribute them on a terrestrial scale - according to the DVB-H specifications and probably on UHF.

Phase 3

■ Implementation of the "digital dividend"

➤ Start approx. 2012 (ECC TG4)

Intention:

- Up to 10 TV channels for expanding mobile phone use
- Harmonization throughout Europe of TV channels 60 to 69 for mobile radio use

➤ Consequences:

- Top quality microphone use on these and adjoining frequencies will be ruled out henceforth
- No substitute frequencies available for affected microphone systems
- Frequency planning considerably restricted in conurbation areas
- Technical systems for major events jeopardized in the extreme

Phase 4

- **Internet access on UHF TV frequencies in regions lacking in infrastructure**
- Initial regional test operation is in the planning phase
- Intended or unintended side effects:
 - Arousing and addressing desires whose "hunger for resources" (also politically motivated) can scarcely be estimated at this point in time.
 - The problem: WLAN on UHF with effective frequency use will be very expensive (market is too small). But standard WLAN systems take up huge UHF resources.
- Consequences:
 - Support for data transfer systems not actually involved in top quality multi-media production
 - Potential alternative areas for multi-media productions with wireless microphones are being occupied in the long term

Phase 5

- **Changeover of DVB-T from "PAL" to HDTV**
 - Already being planned in some countries!
 - As it is scarcely possible to reduce the number of programmes, legitimate frequency use of the primary service will increase by a factor of 3 to 4 in order to assure quality
- **Consequences:**
 - Secondary use by microphones in conurbation areas completely ruled out
 - **Frontend of professional multi-media production on UHF collapses completely because of the lack of production frequencies**

What else is happening?

- Parallel to these developments, alternative potential resources are going to be gradually taken up with other applications
- For example:
 - The microphone band from 1785 to 1800 MHz, identified in the ETSI-TR 102 546 as European ENG band, is to be converted into a "flex band"
 - Digital broadcasting (DAB) is being moved from the L-band to the VHF range because of the significantly superior station range.
Unfortunately, there are already numerous applications today which will also fill the L-band, an interesting frequency range for wireless microphones.

How can multi-media contents be produced in future without wireless microphones?

Who will lose the distribution contest for UHF frequencies?