SUMATRONIC

30 YEARS
RADIO A-Z
Some of our customers

As well as various customers in:
Our services

- Studio technology and infrastructure (construction and maintenance)
- Sound design
Everything around DAB+ and FM

7/24h on-call / maintenance
Studies / Consultations for DAB

- Receiver tests
- Measurement report regarding reception (among others bit errors, field strengths)
- Optimizations of transmitter networks (SFN). RF and audio analyses
- Audio level comparisons in ensemble
- Many more

www.sumatronic.ch
Ensemble Loudness Level Comparisons
Measurement reports
Interference Analyses

**Situation:**
This measurement was made on the small road just before the bridge of the A5 highway. The Digris 10A transmitter was not completely in sight due to trees obscuring the line of sight. Therefore the signal will be stronger on the 7 m elevated highway. The DAB reception of RMS (10B) will be impaired despite the relatively large distance to the
All measurement data on Google Earth
All measurement data on Google Earth
Our services

From A-Z

Complete DAB playouts

Measuring & monitoring systems

Special solutions

DAB laboratory testing & design services
DAB Repeater
From simple to complex projects.

- No Service
- Service

Swiss Made by Sumatronic

- Stores
- Offices
- Parking garages
- Public buildings
- ...

SUMATRONIC AG

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With good reception, DAB and FM offer perfect reception.

With sufficient reception, the sound quality remains practically the same with DAB, but decreases with FM.

If the quality of the antenna signal (reception) falls below a certain value, DAB remains mute or the sound sounds choppy. Via FM, the radio programme can still be heard in reduced audio quality (noise...).

If the quality of the antenna signal decreases even further, usable reception is no longer possible even with FM.
First need for DAB repeaters

Reception outdoors and at home works

Reception indoors does NOT work

Interferences by many other devices in the store

Attenuation of the transmission signal through the building envelope

Reception inside only works with repeater system

Shop without Repeater

Shop with Repeater
DAB coverage with Repeaters

DAB penetrates buildings less than FM.

DAB reception in buildings, e.g. in:

- Stores
- Offices
- Parking garages
- Public buildings
- Underpasses
- ...
DAB reception in the parking garage is feasible
Installation of a DAB-Repeater-System

Principle of a DAB repeater system
Example 1
Example 2

The name of the cable "thick" (green) has been changed to "normal".

Building

- DAB Repeater
- 5-part splitter 0.3 dB
- 3-part splitter 2.3 dB
- 2-part splitter 3.3 dB
- 3-part splitter 0.3 dB
- 2-part splitter 3.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
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- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
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- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB
- 3-part splitter 0.3 dB

Storage 1

- DAB repeater ant 1
- DAB repeater ant 2

Storage 2

- DAB repeater ant 3
- DAB repeater ant 4

Workshop Area 1

- DAB repeater ant 5

Workshop Area 2

- DAB repeater ant 6

Storage 3

- DAB repeater ant 7

General Information

- Cable "small" Atis 0.4 dB/linm
- Cable normal Atis 0.15 dB/linm
- Cable "thick" Atis 0.54 dB/linm

Level Information: 0 dBm = 1 watt = 1000 dBm
Installation of a DAB-Repeater-System

Indoor Tx
Installation of a DAB-Repeater-System
Is DAB+ just a bridge technology until everything is IP?
Is DAB+ just a bridge technology until everything is IP?

• Every technology is a bridging technology until a better, more convenient and efficient technology comes on the market.

• FM was a bridge from AM to DAB+, while it was invented about already 90 years ago.
Is DAB+ just a bridge technology until everything is IP?

At first glance: It sounds logical that IP is everywhere and therefore ideal, but:

- **DAB+ is here, millions of receivers and a large variety of radio programs are available.**
- **IP / Internet is neither energy-efficient nor reliable**
Is DAB+ just a bridge technology until everything is IP?

DAB+ has the potential to be the main broadcast technology for the next 20 to 30 years,
not just for a few years as some claim.
The lack of DAB+ coverage indoors can be a disadvantage to DAB-broadcasters, -Audience and the DAB+ standard

- In car parks there is usually a mobile phone service (via repeaters) to ensure connectivity for emergency calls.

- Listeners with suitable mobile service can stream anything there, but regular DAB+ audiences have no reception.
The lack of DAB+ coverage indoors can be a disadvantage to DAB-broadcasters, -Audience and the DAB+ standard

- This is a disadvantage for broadcasters as it favors streaming services (e.g. Spotify).

- It pushes the audience to streaming rather than DAB+.

- This pushes the audience to social media with dubious "news", away from the serious broadcasters.
The lack of DAB+ coverage indoors can be a disadvantage to DAB-broadcasters, -Audience and the DAB+ standard

- **DAB should be available everywhere people expect it.**
- **As this is not possible to ensure coverage from outside in many cases, DAB-repeaters are essential.**
- **Building owners should have options to equip their buildings with DAB+ reception if they want to.**
DAB+ becomes important in emergencies

- During natural disasters, broadcast services are often the only services still available.
- IP services break down and can be attacked much more easily.

EBU recommends to use the regular broadcast services for crisis → DAB+ (R 156 infrastructure strategy to ensure content distribution during times of crisis)
In-Door reception would be important but

- no technical standards in Europe
- no license-free operations
- ONLY Switzerland has a standard + license free operation
Radio from A to Z
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