



Fernsehen und Radio für Südtirol
Televisione e radio per l'Alto Adige
Televizion y radio per I Südtirol

DAB+ coverage in tunnels in South Tyrol

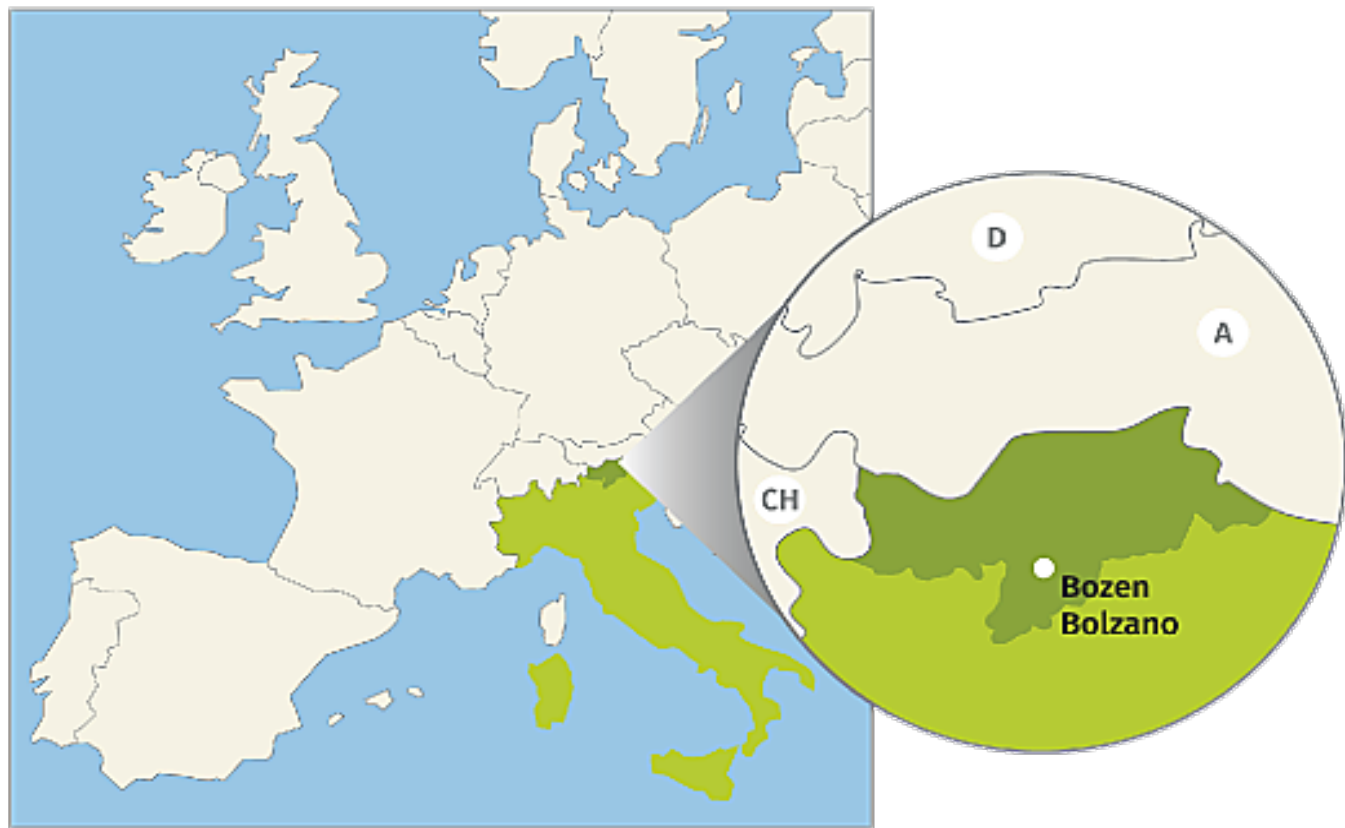
Georg Plattner

**Rundfunkanstalt Südtirol
Radiotelevisione Azienda Speciale della Provincia di Bolzano**





**South Tyrol – northernmost province of Italy
three language groups German, Italian and Ladin**





RAS services more than

1200 transmitters on 120 transmitter stations





RAS operates 37 Digitalradio stations in South Tyrol



Rai Südtirol

Rai Radio 1 Rai Radio 2

Rai Radio 3



BR BAYERN 1

BR BAYERN 2

BR BAYERN 3

BR 24

BR

BR KLASSEK

Heimat

Die Maus[®] WDR

Deutschlandfunk Kultur

Deutschlandfunk Nova



1
RADIO ÖSTERREICH 1
SRG SSR

T
RADIO TIROL
SRG SSR

5
HITRADIO Ö3
SRG SSR

radio FM4



RADIO SWISS
CLASSIC
SRG SSR

RADIO SWISS
POP
SRG SSR

RADIO SWISS
JAZZ
SRG SSR

RTR

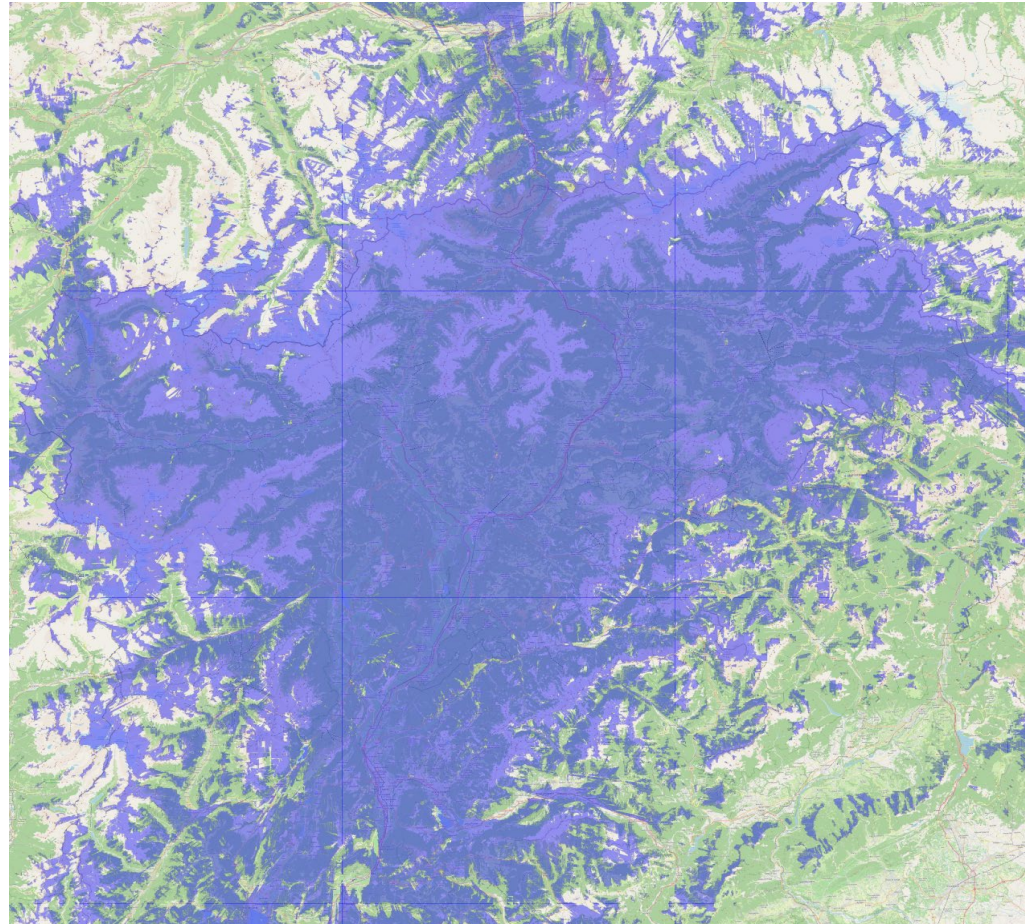
RSI RETE DUE



DAB coverage > 99,6% with 114 transmitters on 57 sites

RAS 1-10B

RAS 2-10D





Coverage with transmitters outside the tunnels





Coverage with transmitters outside the tunnels

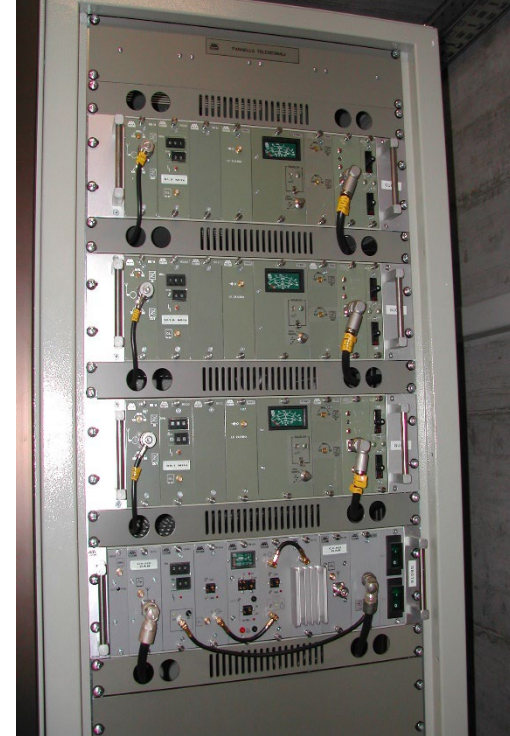
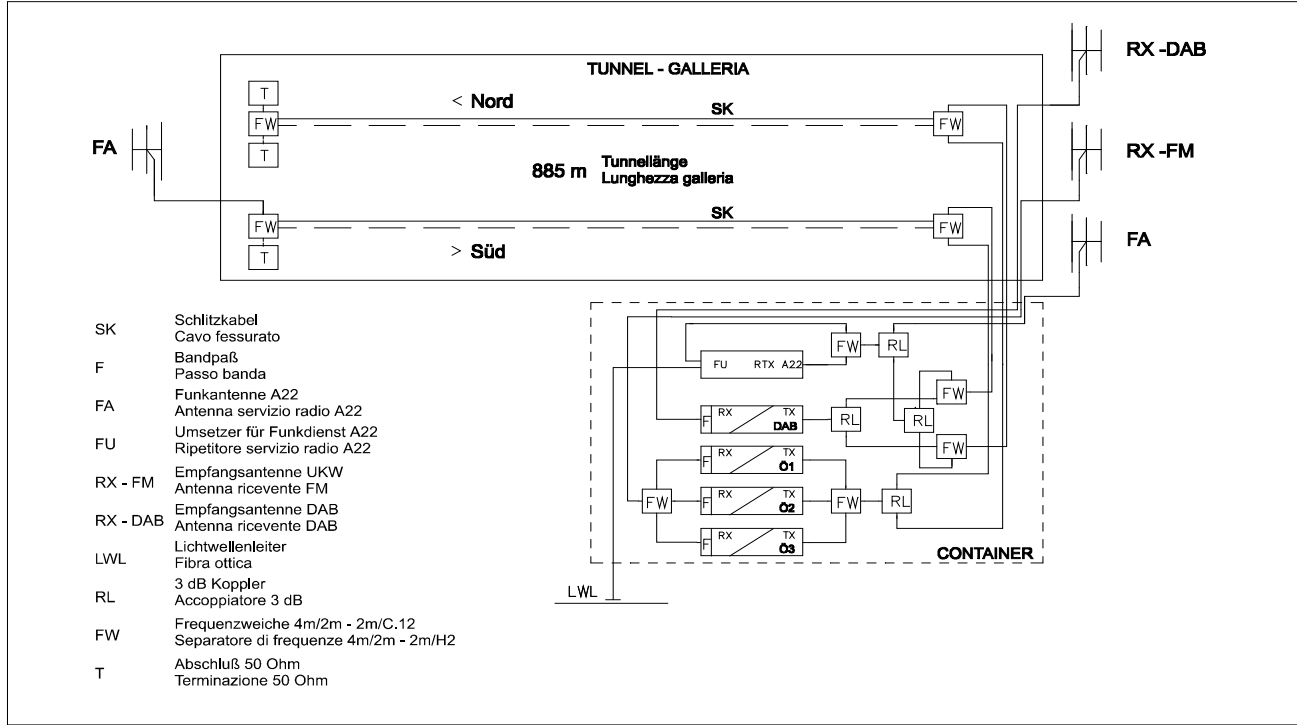


Tunnels with metal lining



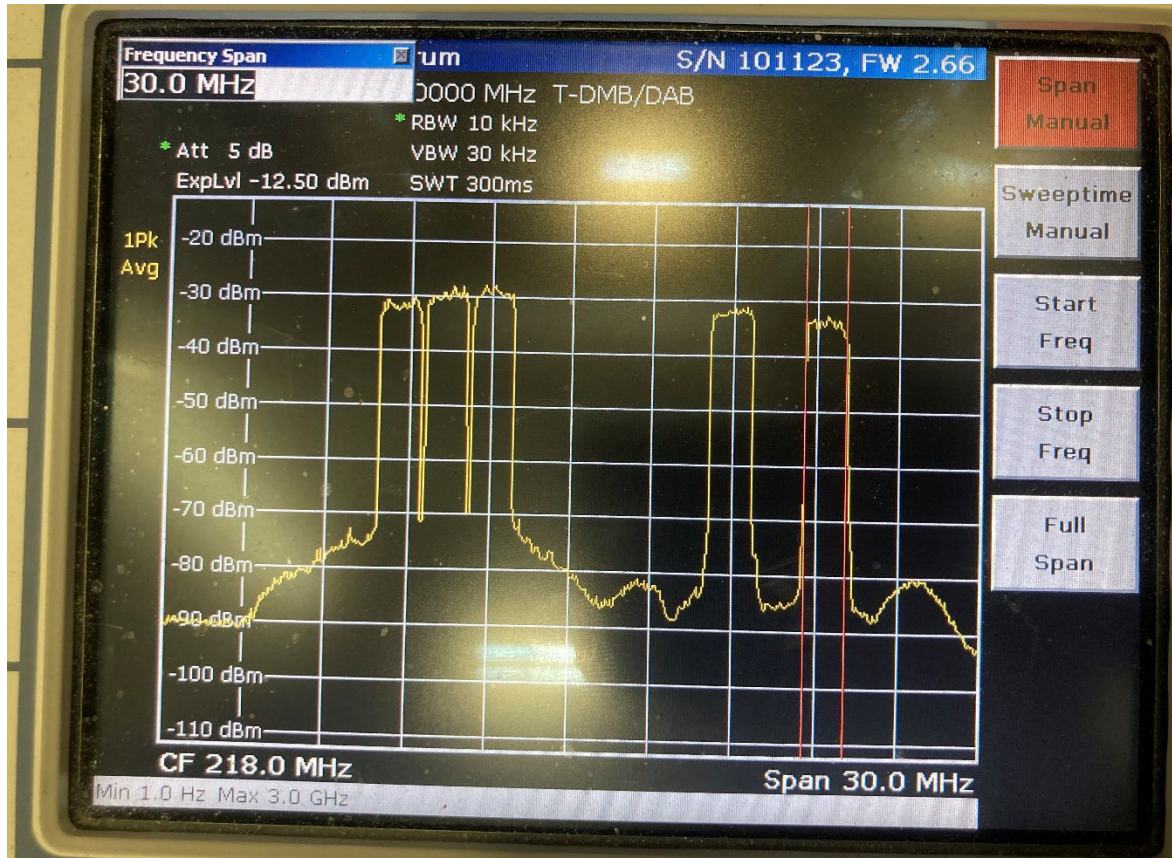


First installations on the Brenner highway A22



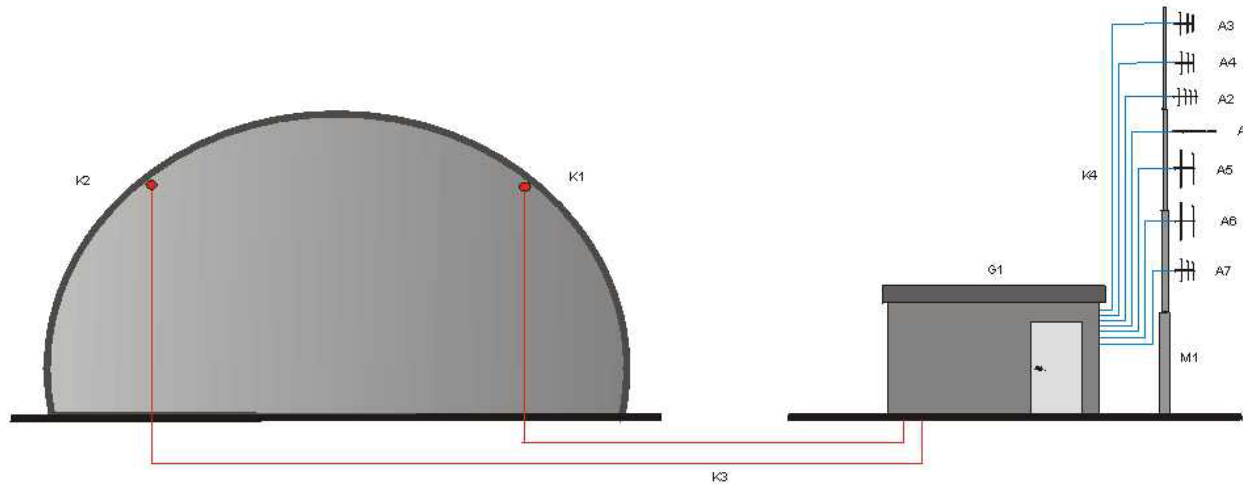


Messungen





First installations on the Brenner highway A22



- A1= UKW-RX Antenne (K524017)
- A2= DAB-RX Antenne (K768494)
- A3= Zivilschutz 118 (2m)
- A4= Straßendienst (2m)
- A5= Polizei (4m)
- A6= Feuerwehr (4m)
- A7= RAS Fernüberwachung (2m)

- K1= RX-Schlitzkabel 7/8" (RFS RAY78) oder gleichwertig
- K2= TX-Schlitzkabel 7/8" (RFS RAY78) oder gleichwertig
- K3= CELLFLEX 7/8
- K4= CELLFLEX 3/8
- NB: Alle Koax-Steckverbindungen 7/16" oder N
- G1= Containergröße zu bestimmen
- M1= Masthöhe zu bestimmen



Radiating cable





Installations on federal and provincial roads





Installations on federal and provincial roads





Installations on federal and provincial roads





Digital radio reception in tunnels with $L > 500\text{m}$ 39 tunnels with a total length of around 40 km

A22 Brenner highway:

Virgl
Franzensfeste

Main roads:

Auer + St. Daniel
Brixen I+II+III
Bruneck
Eggental I+II+III
Gadertal I+II+III+IV+V
MeBo
Meran
Mittewald
Mühlbach I+II
Naturns
Pflaurenz Einfahrt Gadertal
St. Jakob + Leifers
Sarntal I+II+III
Schnals
Sonnenburg
Staben
Töll
Ulten
Virgl Bozen
Völs
Waidbruck I+II+III
Welsberg

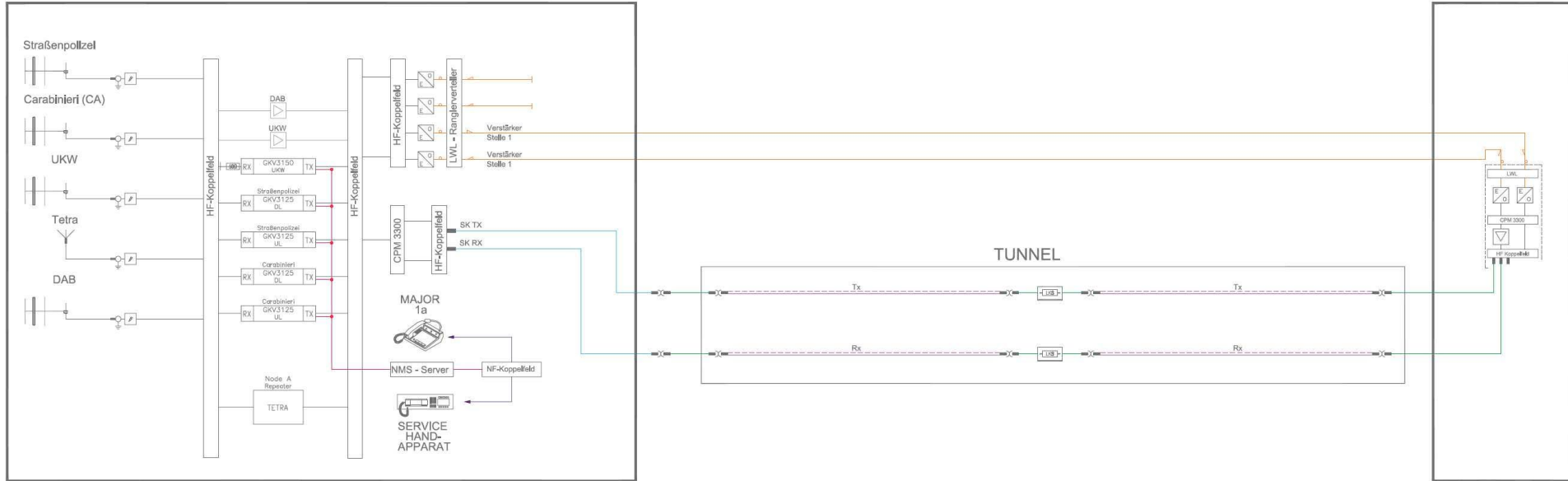




Fiber optic broadband system

Portal Ost

Portal West





Fiber optic broadband system



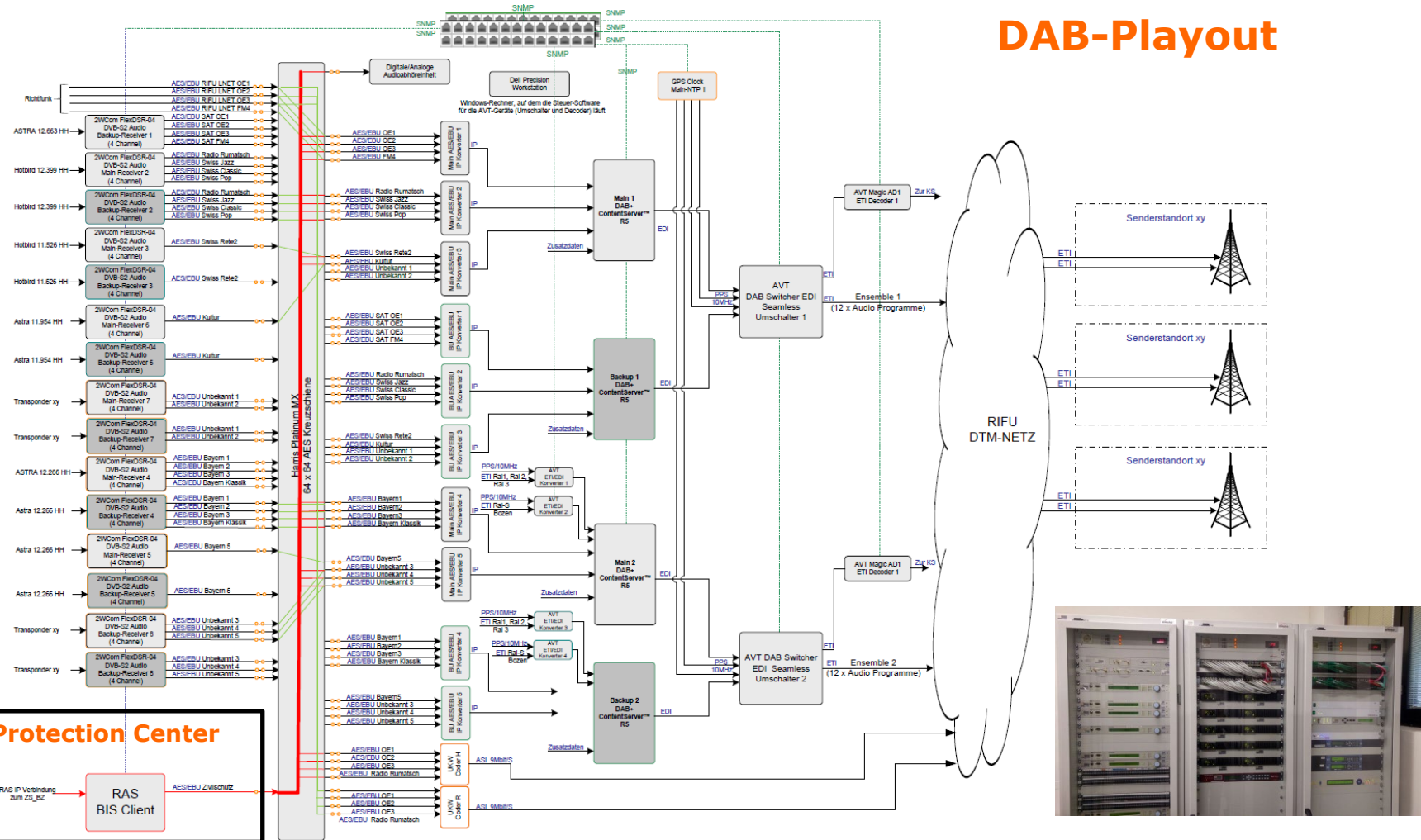


Intercom option in the tunnel



RAS

DAB-Playout



Civil Protection Center

RAS BIS Client





Involvement in the planning phase





Measurements





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